CHEMICAL INDUSTRIES

. . the business magazine for makers and users of chemicals

Management • Research • Production • Marketing

Volume 46 Number 2

Contents for February, 1940

Editorial

The Costs of Chemurgy—Synthetic Fibers—Mercurial Quicksilver—Chemical Exposition 147

Feature Articles

Progress In Synthetic Fibers
By Gustavus Esselen, Inc., Arthur D. Little, Inc., and Skinner & Sherman, Inc. 150

Searles Lake Latest Source of Bromine 156

The Chemical Tourist Visits At the Hub of New England Chemical Trade By Williams Haynes 158

Can A Purchasing Agent Afford To Be Tough?
By Charles J. O'Conner 163

The Pulse of Opinion—
Why Not A Strictly Chemical Show? A Symposium 164

Formulation of Printing Inks By Charles F. Mason, Ph.D. 166

Plant Operation and Management

Handling Coal—It's a Science By Norris E. Coalwell 178

New Processes 180

New Equipment 181

Packaging, Handling and Shipping 182

Bag Closers Aid Trend to Use of Bags 184

New Chemicals for Industry

New Developments In Red Lead By H. D. Ward 191

Booklets and Catalogs 194

New Products 194

Chemical Specialties

Automotive Chemical Specialties By Charles S. Glickman 196

Trademarks of the Month 199

News of the Month in Review

Chemical News in Pictures 169, 201

General News 209

Washington 212

The Chemical Markets 214

Prices Current 227

Part 2: Statistical and Technical Data Section

Current Statistics—Business Trends 249

Chemical Stocks and Bonds—Chemical Finance 251

U. S. Patents 253

Foreign Patents (Belgian, Canadian, English, French) 261

(Index to Advertisements . . . Page 246)

Consulting Editors

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Temperature...Normal!

Joseph Poston has a key job in the operation of the rotary lime recovery kilns at Mathieson's Saltville, Va. Plant. He has to keep careful watch at the control panel, to see that an even balance of temperature, feed, etc., is maintained in these kilns.

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The Reader Writes—

No "Cut-Up"

Could we offer a suggestion which we think those who preserve their copies of CHEMICAL INDUSTRIES will appreciate? Why not place the coupons, which appear on the "Booklets & Catalogs" and "New Equipment" pages, away from the text of the journal, so that it will not be necessary to cut out a section of an article to which one may wish to refer at a later date? Of course, you are the printer and this is only from a reader's standpoint.

M. W. HILL, *Chemist*,
B. H. K. Laboratories, Leechburg, Pa.

How About the Evenings?

Can't you arrange more leisure for me to read CHEMICAL INDUSTRIES? It is my greatest problem—the days are not long enough. Your paper goes the rounds, so at least six others see and enjoy it.

A. H. HOOKER, JR.,
Hooker Electrochemical Company,
Tacoma, Wash.

Thousand Pardons

You may recall that I am a subscriber to your journal of CHEMICAL INDUSTRIES, which I read with much interest. Although I read Mr. Singer's article, it did not come to my attention until I was looking over today an article in the December *Foundation*, page seven, that there had been omitted from Mr. Singer's article, "What Are the Sources of Scientific Information," any reference to the National Research Council Bulletin 102—Industrial Research Laboratories of the United States—Sixth Edition, and also any mention of the *Annual Tables of Constants and Numerical Data*, which are sponsored by a committee of this Division of Chemistry and Chemical Technology.

I presume these are not vital omissions, but on the other hand information of very great use can be obtained from either of these publications.

HERBERT R. MOODY, *Chairman*,
Division of Chemistry & Chemical Technology,
National Research Council,
Washington, D. C.

Another First

You have certainly scored another first in the publication field with the new digest of the foreign patents. It is by far the best service of its kind, and in fact I do not know any other source of such important data.

ARTHUR E. SMYTHE,
Tulsa, Okla.

CALENDAR OF EVENTS

February

Feb. 12-15, American Institute of Mining and Metallurgical Engineers, N. Y. City.
Feb. 13, American Ceramic Society, Art Division and Pittsburgh Section, Hotel Webster Hall, Pittsburgh, Pa.
Feb. 14-15, Annual Eastern Safety Conference, Newark, N. J.
Feb. 15, New England Paint and Varnish Production Club, Hotel Vendome, Boston, Mass.
Feb. 16, Society of Chemical Industry, American Section, N. Y. City.
Feb. 19-22, American Paper and Pulp Association, Annual Meeting, Waldorf-Astoria, N. Y. City.
Feb. 19-22, Technical Association of the Pulp and Paper Industry, Annual Meeting, Roosevelt Hotel, N. Y. City.
Feb. 21, Association of Newsprint Manufacturers of the U. S., N. Y. City.
Feb. 21, St. Louis Paint, Varnish and Lacquer Association, St. Louis, Mo.
Feb. 22-24, Federation of Paint and Varnish Production Clubs, Southern States Associates, mid-winter meeting, Atlanta-Biltmore Hotel, Atlanta, Ga.
Feb. 22-24, Pacific Coast Pest Control Operators' Conference, Univ. of California, Berkeley, Calif.
Feb. 26-28, Liquefied Petroleum Gas Association, Annual Convention, Netherlands-Plaza Hotel, Cincinnati, O.
Feb. 29, Chicago Drug and Chemical Association, Morrison Hotel, Chicago, Ill.

March

March 1, American Institute of Chemists, N. Y. Chapter, N. Y. City.
March 1, Baltimore Paint and Varnish Production Club, Baltimore, Md.
March 4, Chicago Paint & Varnish Production Club, Electric Club, Civic Opera Building, Chicago, Ill.
March 4-8, American Society for Testing Materials, Annual Meeting, Hotel Statler, Detroit, Mich.
March 7, Indianapolis Paint, Varnish & Lacquer Association, Columbia Club, Indianapolis, Ind.
March 8, A. C. S., N. Y. Section, Joint Meeting with S. C. I., Nichols Medal Presentation, N. Y. City.
March 11-12, 1940 Massachusetts Safety Conference, Boston, Mass.
March 13, Philadelphia Paint, Varnish and Lacquer Association, Philadelphia, Pa.
March 13-15, A. S. T. M., Committee D-13 on Textile Materials, Charlotte, N. C.
March 13-16, American Society of Biological Chemists, New Orleans, La.
March 14, Annual Drug, Chemical and Allied Trades Banquet, DCAT Section, N. Y. City Board of Trade, Waldorf-Astoria, N. Y. City.
March 14-15, New England Gas Association, Hotel Statler, Boston, Mass.
March 18-20, Amer. Water Works Ass'n., Southeastern Section, Thomas Jefferson Hotel, Birmingham, Ala.
March 20, St. Louis Paint, Varnish and Lacquer Ass'n., St. Louis, Mo.
March 20-22, New Jersey Sewage Works Ass'n., Silver Anniversary Meeting, Stacy Trent Hotel, Trenton, N. J.
March 21, New England Paint, Varnish and Production Club, Hotel Vendome, Boston, Mass.
March 21, Oil Trades Ass'n. of New York, Annual Meeting and Election of Officers, Waldorf-Astoria, N. Y. City.
March 25, Packaging Institute, Packaging Machinery Division, Hotel Astor, N. Y. City.
March 26, Packaging Institute, Inc., semi-annual meeting, Hotel Astor, N. Y. City.
March 27-29, American Water Works Ass'n., Canadian Section, Toronto, Ont.
March 28, Chicago Drug and Chemical Ass'n., Morrison Hotel, Chicago, Ill.

Two-Fold Use

We regularly receive your excellent magazine and *Buyer's Guidebook*, and find it a great help in our purchasing and in keeping in touch with the chemical industry.

ARTHUR LEWIS,
Technical Department,
Dade Chemical Co.,
Miami Beach, Fla.

Calendar of Events

Your idea of keeping a detailed Calendar of Events for the chemical and allied fields is a good one and should have some very excellent practical results. I find that there is a great amount of conflict that I believe could be avoided if there is some such clearing house of information as yours functioning. Of course, you will have to have the active cooperation of the association secretaries to do a real job.

JOSEPH H. WINTHROP,
Baltimore, Md.

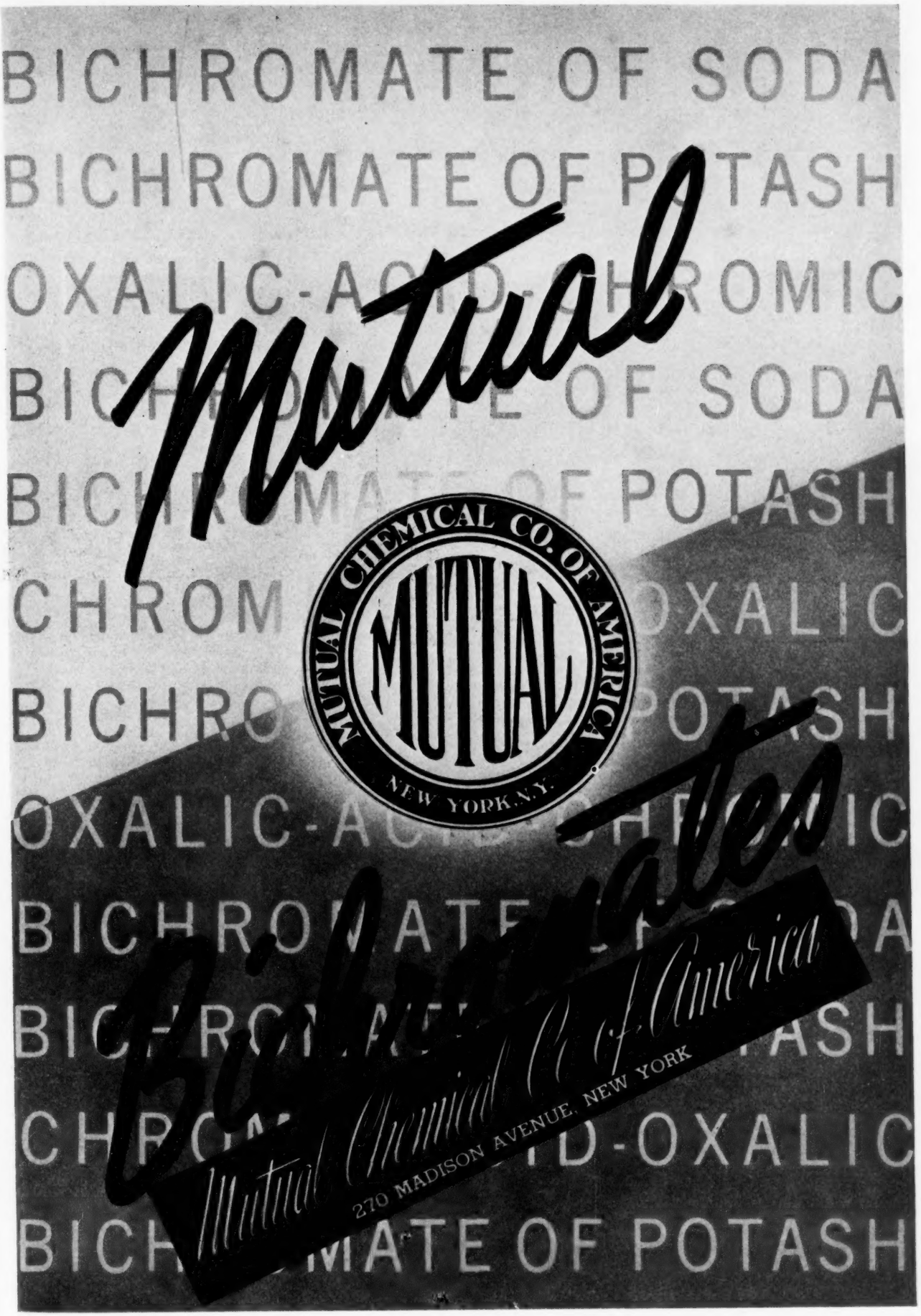
Stop the Flow

I was particularly interested in your comments on the "We Page" of last month referring to the question of employment outlook in the chemical field and the recent report of the American Chemical Society on the subject.

It seems to me to be pretty much like a vicious circle. The chemical industry is constantly being pictured as THE industry in this country showing the greatest current expansion and the one that is likely to show the greatest amount of growth in the next decade or so. How can our young men, and women, too, looking around in this crowded world for some place to land, fail but be impressed by this sort of publicity or propaganda (call it what you will).

In the last decade there has been a tremendous expansion in the chemical courses and laboratory facilities of our colleges and universities. Almost every college feels that it just must have a well-equipped chemical laboratory. Many of our colleges have added such facilities through the use of PWA funds. Privately endowed institutions are running into stiff competition from state colleges. It must be a temptation to the former to let anyone with the means go through even though many qualifications necessary to the make-up of a good chemist are lacking. The state universities, on the other hand, have really little to say as to who their students are. There is little use in locking "the stable door after the horse is gone." The disproportional flow of youngsters into chemical courses in comparison to other courses (based on the ability of various industries to absorb them) must be curbed at the college door.

R. H. DOLSON,
New York City.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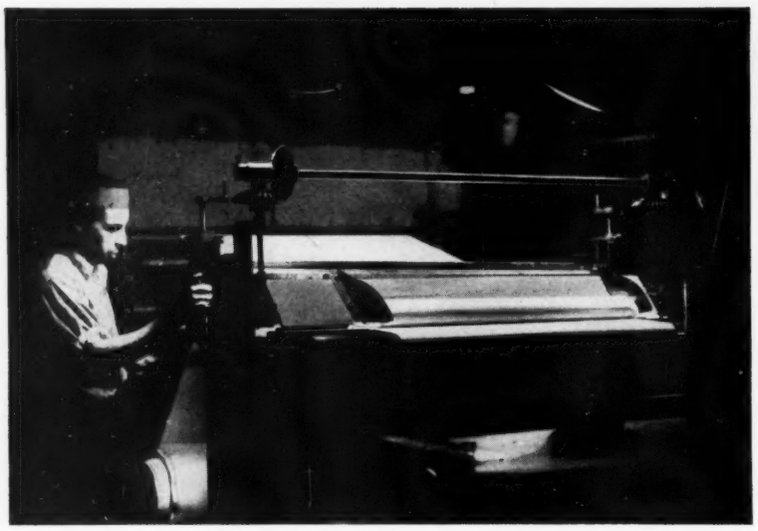
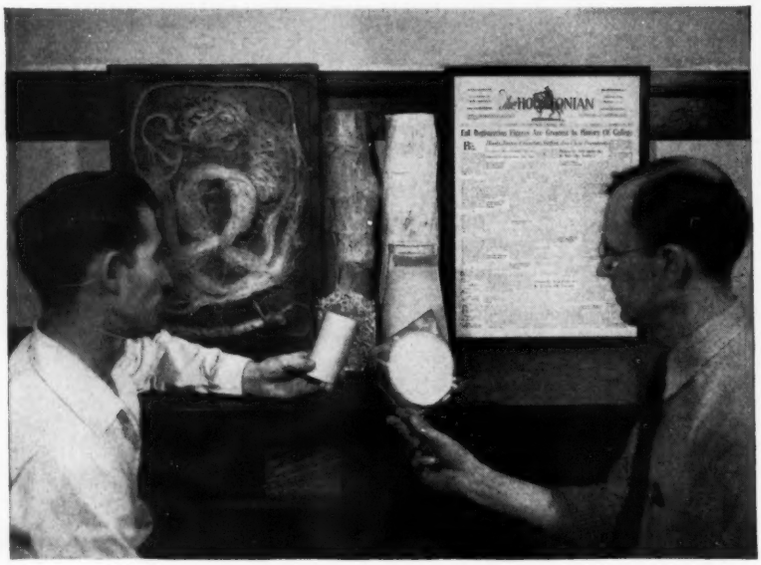


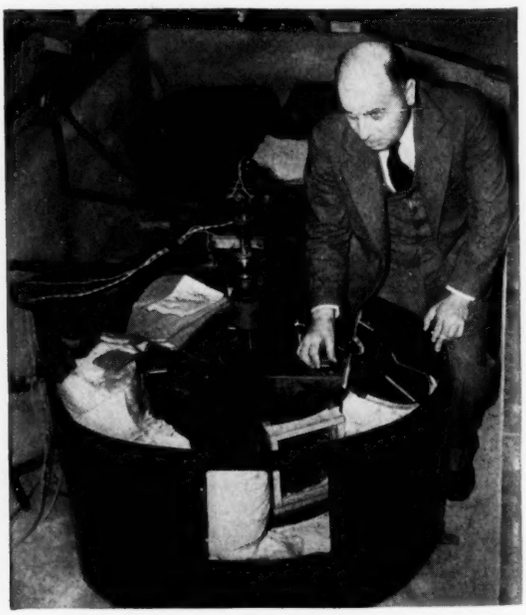
(*Above*) **CHANGING CLOTH INTO ARTIFICIAL LEATHER** is routine magic for this coating machine. Nitrocellulose solution, with pigments and oils, is poured on the cloth—spread by doctor blades to the right thickness. Hot air dryers remove volatile solvents after coating. From two to a dozen or more coatings are required for different types of artificial leather. Photo was taken under safety lights, because of explosive atmosphere. Cyanamid is a leading supplier of nitrocellulose, resins, and plasticizers to the artificial leather industry.

(*Below*) **ROPE AND PAPER FROM CASTOR PLANT** are new chemurgic achievements at Sam Houston State Teachers College. Photo shows Professor W. W. Floyd (right) and Melvin Handley with exhibits of castor products. Ropes are made from bast fiber from the bark of the castor stalk. Copy of *The Houstonian*, college newspaper, was printed on paper made in the Sam Houston Laboratory from pulp of the castor stalk.

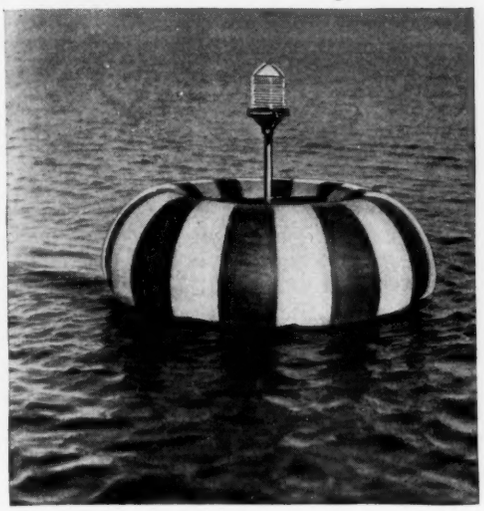


(*Above*) **MECHANICAL "RAT"** tests vitamin content of drugs and foodstuffs with new accuracy. Developed by Professor Douglas J. Hennessy of Fordham University, it measures fluorescent illumination from vitamins by means of photoelectric cell and meter—is expected to supplant slow biochemical tests on live rats.

(*Below*) **SCALE-MODEL MINE** tests roof-structure safety in process developed by Professor Philip B. Bucky of Columbia. Model spins at 3,000 RPM past cutaway section of centrifuge shell. Synchronized light flashes as model passes opening, to make model seem stationary. Cyanamid is an important factor in the mining industry, through its line of mining chemicals, ore dressing laboratory, and field engineering service covering all mining fields of the world.

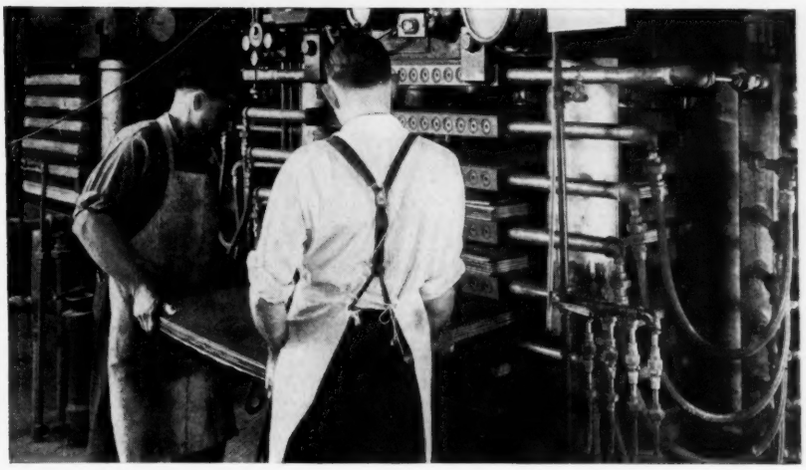


CHEMICAL NEWSFRONT



(*Above*) **SEA-GOING LIGHTS** for runway marking may soon usher in an era of regular night flying for seaplanes. Large rubber float is designed to keep light practically stationary even in heavy surfs. Many Cyanamid compounding materials aid in new rubber developments.

(*Above*) **TEST-TUBE FASHIONS** are streaming out of chemical laboratories. This winter the outdoor girl wears a ski suit of lastex and ski cap made from wood shavings. New products of the rubber and textile industries mean new problems for the manufacturers—and Cyanamid anticipates their needs by its constant study of the specialized problems of the industries — and by its comprehensive line of rubber chemicals and textile specialties.



(*Above*) **BEARINGS OF CLOTH AND PLASTICS** rival steel in hardness. Photo shows resin-impregnated cloth being loaded between patens of hydraulic press, for the squeezing that will give a 50-pound bearing the strength to carry million-pound loads in steel mill service. Laminated plastics of a similar type, made with BEETLE* Resins, find many architectural and design uses.

(*Above*) **TELEVISION SCENERY** reproduces landscapes in miniature through the aid of such variegated products as wet sponges, paint, steel wool, sponge rubber, plaster, tobacco. Not a volume market—but an off-the-beaten-track use for the products of many divisions of the chemical industry—and to almost all these divisions Cyanamid supplies many indispensable chemicals.

American Cyanamid & Chemical Corporation

30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

*Registered Trade-mark of American Cyanamid Company.
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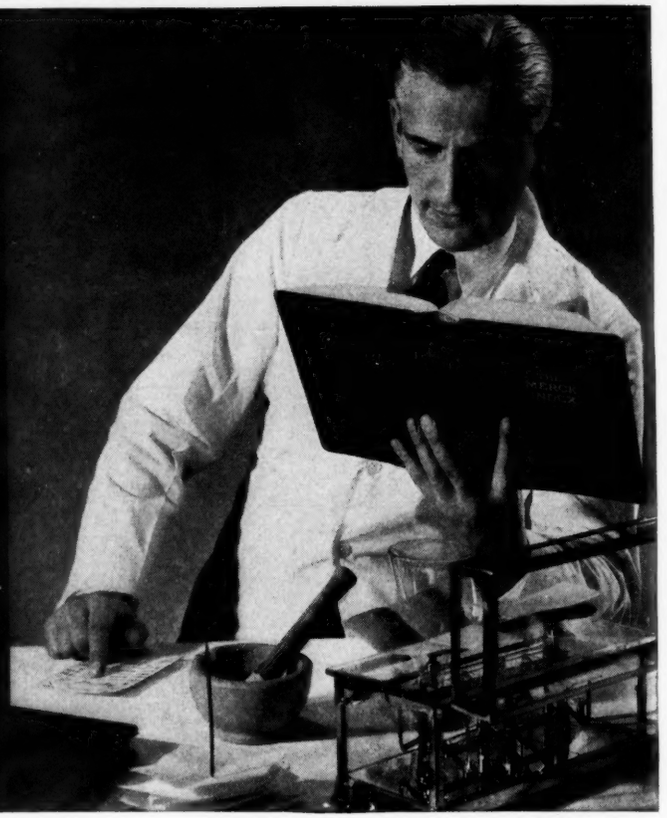

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- In the section on "Coal-Tar Colors for Use in Foods, Drugs and Cosmetics," 113 colors are described.
- The section on "Indicators" covers 126 indicators, and the section on "Minerals" embodies the description, formulas, and percentage composition of 187 minerals.
- Another new section contains formulas for the preparation of Culture Media, Fixatives, and Staining Solutions, comprising a total of 212 formulas and methods of preparation.
- Also Useful Tables, Antidotes for Poisons, and Literature References.

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"This encyclopedia of chemicals and drugs represents the most extensive compilation of this authoritative reference work that has been undertaken since the first edition appeared in 1889."—The Apothecary.

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"The fifth edition should now supplant the previous edition which is, or should have been, in the reference library of every prescription room. Every pharmacist will find extensive use for this thesaurus in his professional work; so place it beside your U.S.P., N.F., and Dispensatory where it will be available for instant reference."—Druggists Circular.

"The Merck Index will be a valuable addition to every pharmaceutical library, for it is in fact a condensed, comprehensive and reliable encyclopedia of chemicals and drugs for the chemist, pharmacist, physician and those in allied professions."—Midwestern Druggist.

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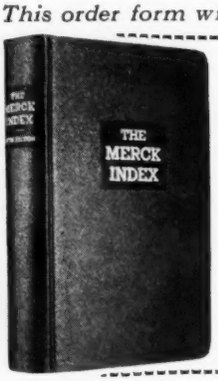

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CHEMICAL INDUSTRIES

The Chemical Business Magazine

Established 1914

REP. Roy O. Woodruff (Mich.) left, conferring with House members at recent "Farm Chemurgy" round-table discussion in Washington.

The Costs of "Farm Chemurgy"

FIFTY-FOUR million Americans (approximately 40 per cent. of our total population) live on farms and in rural communities. No wonder politicians and industrialists alike are alarmed at the continued financial plight of the farmer. The theory that scarcity is the panacea for all of our agricultural ills has been thoroughly exploited and discredited. What next?

Seeking ammunition for the national election, House Minority Leader Joseph W. Martin, Jr., has set up an agricultural study committee of 46 Republican members of the House. A subcommittee, under the chairmanship of Representative Roy O. Woodruff, Michigan, last month in Washington listened to nearly 100 industrialists, scientists, farm leaders and chemurgic pioneers explain what research has done to develop industrial uses for farm products and what reasonably may be expected from "Farm Chemurgy" in the future. Very little not already known by the scientific world was disclosed, yet from questions asked by members of the committee it would appear that much of what was reported was new to them.

No intelligent person can disagree with the statement of Dr. C. M. A. Stine that "Only through union with science can agriculture hope to achieve its destiny in this modern world." But research costs money. Dr. William A. Hamor, of Mellon Institute, has estimated that 2,000 industrial concerns during 1939 spent $215,000,000 to develop new products, improve old ones, or to reduce costs. All manufacturing industry spends about one-half of one per cent. of the value of goods sold on research; the chemical industry from two to four per cent. of its annual sales revenue. On the other hand, agriculture employs only about one-seventh of one per cent. of the value of its products on research. All, or nearly all of this is provided by government, state and federal.

Competent authorities agree that as much as $240,000,000 might profitably be expended annually on agricultural research, a sum amounting to only three per cent. of an eight-billion dollar farm income. If "Farm Chemurgy" is written into the Republican platform it will be interesting to see what provisions, if any, are made to foot the bill. Industry should not be expected to do it all. The term "Farm Chemurgy" may be relatively new, but industry has been investigating and developing industrial uses for farm products for years and can be depended upon to expand such activity. But equally certain is the fact that future major developments depend upon a broad and expensive program of fundamental research. The farmer should be called upon for many obvious reasons to pay a sizeable proportion of this cost and not leave the burden entirely to industry and the public at large.

Editorial

Synthetic Fibers: The public, of course, in a general way is acquainted with the technological advances made in chemistry in the last decade or two, but it is in textiles probably more than in any other single field that the layman comes in closest contact (both literally and figuratively speaking) with the achievements of the chemist. For this reason the current article "Progress In Synthetic Fibers" in the series "New Goods For Old Industries" will have very broad reader interest both in and out of the chemical field.

Certainly there is more than a suggestion of the story of Aladdin's Lamp in the history of the development of the synthetic fiber industry, first rayon, now nylon, Vinyon, synthetic wool-like materials from casein, and several interesting and commercially important applications of rubber and glass. Too late to be incorporated in this article is the announcement that after ten years of experimentation lines of rayon floor coverings are now available.

This latest innovation opens still another field for yarns and staple fiber that will call for a new, steady, yearly poundage. When one considers that our rayon industry largely if not entirely dates from the World War, the consumption of rayon filament of 356,000,000 pounds really constitutes a remarkable achievement. Rayon staple fiber likewise showed a new consumption record, the total of about 100,000,000 pounds being an increase of 88 per cent. over 1938. Despite large increases in rayon productive capacity in the last two years, producers' stocks of yarn at the close of 1939 amounted to just one week's supply.

Mercurial Quicksilver: Another sensational rise in quicksilver prices has taken place, the advance in foreign metal amounting to $50 per flask. A smaller increase, $21 per flask, was reported by domestic producers. The latest flurry abroad was reported to be largely based on tenders recently issued by the French Government for substantial quantities with delivery specified over a period of three months. Actually it would appear that the associated Spanish-Italian producers are taking full advantage of their strong international position to create higher values.

Considerable delayed domestic purchasing was reported when the news of the advance was released, about equally divided between speculators and actual consumers. Buyers are very much concerned over future market developments. Statistics recently released show that consumers' stocks at the end of November totaled 8,700 flasks and 2,400 flasks in the hands of importers and dealers. While consumer stocks are fairly heavy, they are not unusually large in view of existing conditions.

Consumers recognize that the United States is definitely dependent upon foreign supplies; that domestic production cannot meet all of our requirements. Certainly it now appears that the foreign cartel is operating smoothly and the chances are that still further increases are more than likely.

Prices of mercurials so far have not been revised, but such action can hardly be long delayed. From reliable sources it is reported that the story of heavy anticipatory purchasing of mercurials has been greatly exaggerated. The best proof of this is that manufacturers of mercurials have not raised quotations although they had plenty of justification to do so. When they are forced to go into the quicksilver markets for replacements, higher prices will naturally follow. When this happens, domestic makers of mercurials will likely find some stiff competition from imported materials.

The Chemical Exposition: "The Pulse of Opinion" in this issue contains a number of very enlightening comments by men in the industry on the subject of the Exposition of Chemical Industries. Several of those published, together with a large number received from individuals requesting that their remarks be withheld from publication, seem to indicate a definite preference for the continuancee of the present show with the proviso that a definite chemical manufacturers' section be established.

In some ways the large number who voice the opinion that they are equally interested in seeing both equipment and chemicals displayed is surprising. This would seem to indicate that the line of demarcation between the specific interests of the chemist and the engineer is not as sharp as many would suppose. After all a chief chemist if he is "worth his salt" is concerned with plant operations and equipment.

WITH this issue of CHEMICAL INDUSTRIES a new name appears on the masthead as editor. Happily Walter J. Murphy, who succeeds Williams Haynes, is no stranger to you. For ten years he has served your paper as managing editor and for the past twelve months has directed its editorial policies.

Mr. Haynes has desired for some time to be relieved of the duties of publisher and editor, a position he has filled with great distinction for nearly twenty years, in order to have greater freedom for writing and to exercise closer supervision of other interests. We wish him every success, and hope to have him continue as a feature writer for CHEMICAL INDUSTRIES.

By training and experience your editor, Mr. Murphy, is eminently fitted for the post. A graduate of Brooklyn "Poly," he is a chemist and chemical engineer. Previous to accepting Mr. Haynes' invitation ten years ago to join the staff as managing editor, Mr. Murphy served well in turn The Air Reduction Company, The American Cyanamid Company, The United States Rubber Company, George Chemicals, Inc., and the Mutual Chemical Company of America.

With these concerns his duties were varied and included research, plant operation, equipment design, technical sales service, direct marketing of staple chemicals and merchandising of chemical specialties. He is equally well known at gatherings of both chemical executives and chemists and chemical engineers. Such broad and valuable experience is definite assurance that you as readers of this paper will continue to receive under Mr. Murphy's direction an authoritative interpretation of the commercial developments of the industry and the economic aspects of future technological advances.

Mr. Murphy has traveled widely and is particularly conversant with Latin America, a fortunate coincidence in view of present international conditions.

Walter J. Murphy was elected a Fellow of The American Institute of Chemists in 1934; he is an active member of The American Institute of Chemical Engineers; a member of The American Chemical Society; The Society of Chemical Industry (American Section); The Chemists' Club (New York); and the Salesmen's Association of the American Chemical Industry. He is a member of the Pi Kappa Phi Fraternity.

Walter J. Murphy

Each succeeding generation must build well on the foundation laid by its predecessors. Independent in thought and action, the official publication of no particular group or association, CHEMICAL INDUSTRIES has worked for twenty-five years for the best interests of the American chemical industry as a whole. It has not hesitated to support any movement that it believed was sound. It has criticized when it felt that constructive criticism was necessary. It has advocated changes when such changes promised betterment for the majority. It has never failed to support the rights of the minority and the weak when these rights were jeopardized. Steeped in such splendid journalistic tradition, we confidently believe, Walter J. Murphy will continue the high ideals that have motivated the editorial policies of this magazine.

We are certain that the readers of CHEMICAL INDUSTRIES join with us in congratulating him on his well deserved promotion and wish for him great success in his new position.

"The Publishers."

Courtesy North American Rayon.

Progress in Synthetic Fibers

A Collaboration By Gustavus Esselen, Inc., Arthur D. Little, Inc., and Skinner & Sherman, Inc.

NATURE supplies four textile fibers, wool, cotton, linen and silk. Research provides many more. Nature has no interest in textile mills but supplies fibers only for their usefulness to sheep, cottonseed, flax plants and silk worms. Research plans definitely for production and for man's use.

That is why last year the American textile industry used 750 times as much man-made fibers, products of research, as twenty-five years ago when they were new here, and also why the United States consumption of natural fibers increased by less—much less—than half in the same period.

Seven hundred and fifty to less than one half—that measures how radically synthetic fibers and modified natural fibers are revolutionizing the textile industry. Effects impossible last year are today achieved in the regular course of quantity production by using synthetic fibers or modified natural fibers. And each year the synthetic fibers become higher in quality and periodically lower in price.

Cellulose, from which Nature makes trees, cornstalks, cotton and linen, was first used in making synthetic fibers by Count Chardonnet, a Frenchman, more than fifty years ago. He made reasonably satisfactory fibers by forcing a thick solution of collodion (nitrocellulose) through very fine orifices and hardening it quickly as it came out. His original silk was a little too much like gun-cotton to be fully satisfactory. Ladies do not like to dress in high explosive. Continuing research showed how to modify Chardonnet's fibers and make them no more explosive than cotton; but in spite of that, in 1934, his process was abandoned, superseded by other more satisfactory filament-making processes developed later.

Originally the makers of synthetic fibers used cotton as their raw material and believed that the longer the fibers of the original cotton the better their product would be. They overlooked that their first step is to liquefy, by one method or another, their cellulose raw material so that it has no structure at all. Having destroyed the original fibers, the next operation shapes the thick liquid into tiny filaments and hardens it in that form.

Because ginned cotton is useful to the textile industry without treatment, it proved too expensive to use as a chemical raw material. In its stead the short fibers (linters) left on the cotton seed after ginning—these cannot be made into yarn or thread—have now taken its place. Lately, too, wood pulp specially prepared and purified provides increasing amounts of this necessary raw material to the rayon maker and constant search for other sources continues. Cereal straws, sugar cane bagasse, cornstalks and other agricultural wastes have proved usable, but economic factors prevent their development in the United States. Fibers made from cellulose are by all odds the most important of the synthetics. Of this family viscose fibers make up about two thirds of the present U. S production of rayon yarn.

Spruce was the first, and for many years the only, wood used as the source of chemical cellulose. However, contin-

ued research in this field has developed methods applicable to other soft woods, western hemlock and southern yellow pine. Certain northern hardwoods have also proved useful on what is yet only an experimental scale.

Depending upon how they are made, the various types of rayon fibers differ among themselves in some of their properties. Thus the textile manufacturer has several kinds of fibers in the rayons. The principal varieties of rayon derived from cellulose are viscose, cuprammonium (Bemberg), cellulose acetate, and ethyl cellulose. Each of these has a distinct character of its own which it can impart to mixed goods and to other products of the textile art.

Viscose and Bemberg rayons are actually the same cellulose with which their manufacture begins, having been merely liquefied, formed into filaments, and regenerated in the process. Yet because of differences in processing, viscose and Bemberg fibers possess different characteristics in dyeing and other treatments given the yarns and fabrics made from them. Cellulose acetate (Celanese, Acele, etc.) and ethyl cellulose (Ethoraon) are still different and place in the textile processor's hands still other possibilities of variety from mixtures of different fibers.

Super-Strength Developed

Manufacturers of viscose yarn have during the past year developed super-strength yarns with higher degrees of elasticity. These new yarns have an elongation of about 18% and are as strong in the wet state as the regular yarns are when dry. Typical yarns of this type are Tenasco of American Viscose Corp., and Cordura of Du Pont. used in heavy-duty automobile tires and woven into sails for racing yachts, historically the "Ranger," winner of the 1937 America's Cup Races.

A special abraded-filament viscose yarn is used in dress goods to give a worsted effect. So called staple fiber is spun into threads from short lengths of filaments as distinguished from the usual rayon composed of long filaments twisted together.

New viscose staple fibers produced in this country are: Fibro of American Viscose Corporation, which is spun dyed in colors as well as in black; Sylph of Sylvania Industrial Corporation, which is characterized by a wool-like crinkle; and a continuous spun viscose yarn produced by the Industrial Rayon Corporation.

Germany now makes a water repellent viscose staple and an aerated staple which has a greater air content than the regular types. Snia Viscosa in Italy makes Superlena and Bobol, special types of cut viscose fiber designed for mixture with wool and with cotton, respectively, and Snia Amba, a stable fiber having double the strength of previous viscose staples. Special viscose-base fibers dyed with wool dyes are being manufactured under the names of Vistralan and Artilana in Germany, and Rayolana in England. A viscose fiber containing a nitrogenous substance is produced under the name of Cisalfa and Sacisana in Italy and Fibramine in Belgium.

Teca Holds Crimp

The Tennessee Eastman Corporation, making acetate yarns by the Perlock system, has introduced a special spun black yarn and a new staple fiber, called Teca, which is claimed to have a permanent crimp. Dress fabrics containing Teca simulate featherweight worsteds both in appearance and feel (or "hand" as textile men say). Teca has been combined with viscose crepe yarn for the production of fabrics of the "alpaca" and "Romaine" type.

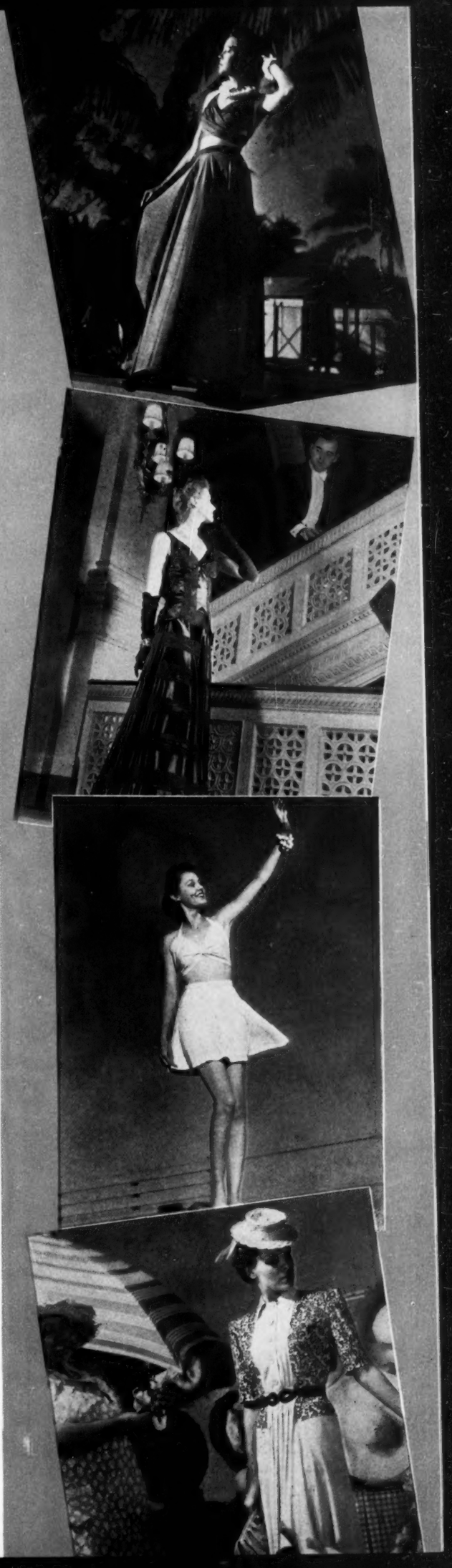
The Tubize Chatillon Corporation has developed a discontinuous filament yarn which is midway between the earlier continuous filament yarn and the new spun yarn.

The Celanese Corporation of America is making a new all-Celanese crepe, called Celannova, in a wide range of colors. Celbrook is the name of this new suiting for sports and beach wear now offered in a wide range of new colors.

The Du Pont Acele acetate rayon is being combined with viscose yarn in the production of new sheer fabrics which are light weight with a soft drape and yet have a closely covered surface.

Cuprammonium (Bemberg) yarns are being used on a large scale in conjunction with natural silk in the manufacture of satin for lingerie and printed surah for ladies' dress wear. A new cut staple fiber called Vicu has been developed in Germany.

These synthetic fibers are imitative of Nature's products. Their manufacture depends heavily, too, on letting Nature do most of the complicated job of molecule building because cellulose, already complex, is the raw material used.



Four ladies at right are wearing costumes of Enka Rayon. Top to bottom: evening bathing suit with swirling skirt for dancing; evening gown of satin and moire stripes; two piece bathing suit in knit jersey; afternoon dress for resort wear of sueded jersey.

Other classes of synthetic fibers of growing importance in textiles go back for their beginnings to much simpler substances. Nylon and Exton, new products of Du Pont initiative in research and manufacture, are actually synthesized from such raw materials as coal, limestone, air and water. Similarly, "Vinyarn" (or "Vinyon" as the trade-mark is) fibers, also new, can be completely synthetic.

"Vinyon" Like Silk

Remarkable in many ways, particularly in the complete departure from precedent in their manufacture "Vinyon" fibers approach silk more closely than do rayons derived from cellulose. Nylon actually goes beyond silk and is stronger and more elastic than the worm's product.

Yarns from vinyl resins are just beginning to be available in large quantities. The advantages claimed for Vinyon, the vinyl resin yarn, are high elasticity and tensile strength as compared with the current types of rayon, good resistance to water, acids and alkalies, and good dielectric characteristics. It has to be dyed with selected dyes and by special processes. It has a strong tendency to develop static electricity, which makes it difficult to handle on the usual types of textile machinery. A more serious disadvantage is the fact that it softens at a temperature below the boiling point of water and thus can be used only in hosiery and other knitted fabrics which do not have to be pressed with a hot iron.

The polyamide fibers have many interesting properties which indicate a bright future for them in the textile field. Chief among these is elasticity. A fabric woven with nylon fibers was stretched 100 per cent. for 3 minutes while wet, and subsequently showed an elastic recovery of 80 per cent. as compared with 32 per cent. for a similar fabric of natural silk.

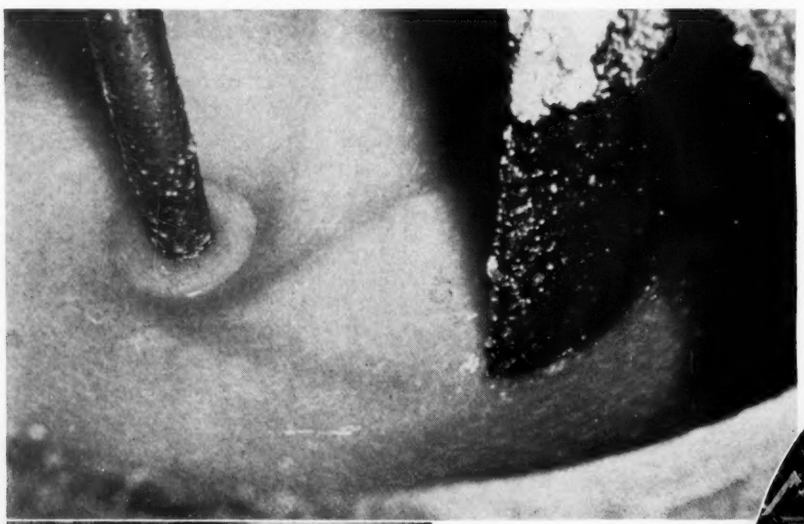
These new truly synthetic fibers show a tensile strength of 5.2 grams per denier, as compared with 4.0 grams per denier for silk, and 2.0 grams per denier for cotton. The wet tensile strength is at least 85 per cent. of the dry strength. The strength is said to remain unchanged after 5 weeks exposure to air or 5 weeks immersion in boiling water or heating for one month at 110° C.

Insensitive To Moisture

Nylon fibers are relatively insensitive to moisture. Fibers dried at 100° C. for 16 hours regained only 0.97 per cent. of moisture when stored at 25° C. in an atmosphere of 50 per cent. relative humidity for five hours. Viscose rayon fibers under similar conditions absorbed about 8 per cent. of moisture. This property is not an unmixed blessing because it tends to complicate the dyeing problem. Nylon fibers appear to dye best in baths containing the dispersed dyestuffs which were developed for the coloring of cellulose acetate. However, the dispersed particles must be exceedingly fine to penetrate the nylon fibers because of their lack of swelling in the aqueous solution.

A type of sewing thread called Neophil has been developed quite recently, and this is probably the first textile product to be made in commercial quantities from nylon and actually placed on the market. Neophil is characterized by great strength and elasticity, ability to withstand repeated launderings without injury, resistance to moisture and perspiration, and resistance to abrasion and wear.

Because of their close resemblance to silk and their properties of strength and elasticity, nylon fibers are the first of



Above—After aging in specially controlled temperature and treatment in tumbling barrels, cellulose crumbs are dissolved into viscose in battery of churns.

Above—Each thread is treated individually at 9600 spinning positions on reels of chemically resistant plastic, over which warm corrosive solutions, washes, flow continuously.

Left—Plastic thread-advancing reels carry filaments extruded in spin bath shown at top, through all stages required in production of pre-treated yarns, as a single thread layer. If a filament breaks, it shows up immediately on reels and flags attention of operator who changes spinneret or makes other adjustment.

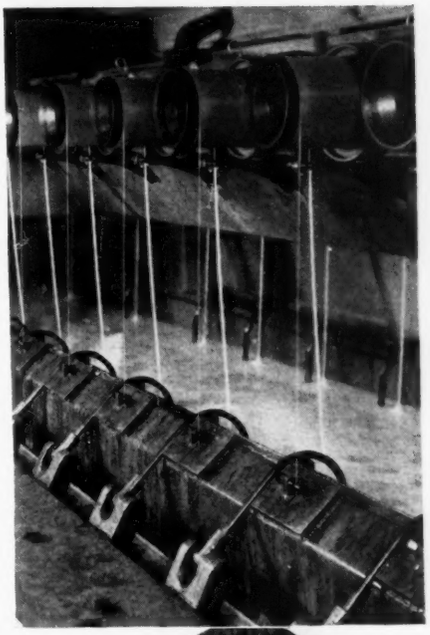
the synthetic fibers which are considered to have a really good chance of supplanting natural silk in the production of women's full-fashioned hosiery. This would be an event of great economic significance because at the present time silk has been largely supplanted by the various synthetic fibers in every textile field except hosiery. If the hosiery manufacturers can use nylon fibers satisfactorily, the United States will no longer be dependent upon foreign sources for any basic textile material.

Fiber making materials are not confined to cellulose in its infinite variety nor to such purely synthetic materials. Even milk, rubber, glass and soy beans supply useful fibers.

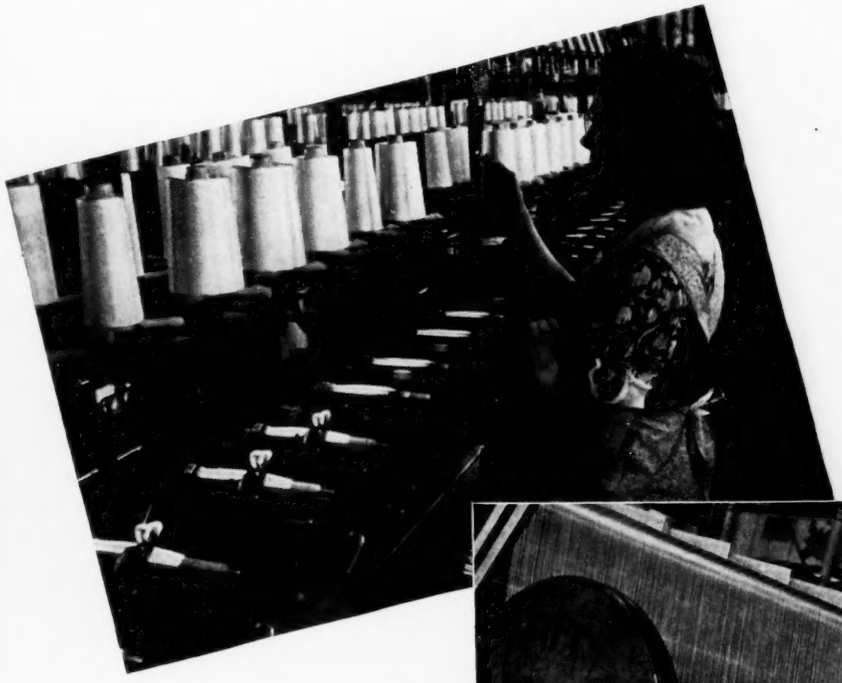
An Italian, Antonio Ferreti, has developed a satisfactory process for the commercial production of synthetic fibers from milk. The manufacture of Lanital, the Italian name for the casein fiber, was started on a commercial scale in Italy in 1936 and production has steadily increased to about 25,000 pounds a day in 1938. Similar fibers are produced from casein in Germany and in Holland. An American government chemist has developed, and patented for public use, a process for the manufacture of a casein-base fiber.

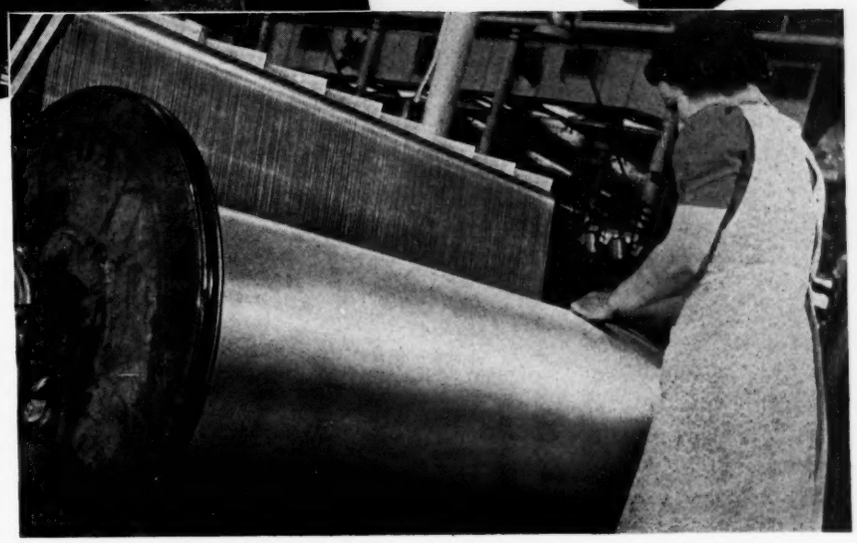
Fibers are not yet produced commercially from casein in this country, but a new plant is now being equipped for this purpose. Probably the biggest factor in this field is Lanital which is manufactured by the Snia Viscosa in Italy. Lanital fibers correspond in size to a 56's wool, but are much more uniform. Lanital fabrics are not attacked by moths or mildew, but if left in the dark in a damp condition for a long period of time they show a tendency to rot and become putrid.

Twenty-five gallons of milk will yield about 10 lbs. of butter and 4 to 5 lbs. of casein fiber, from which can be woven 12 or 13 yards of average fabric designed



Above, right—Yarn filaments formed when viscose or liquid rayon is extruded in dilute acid bath are drawn up on 9600 chemically resistant thread-advancing reels inside hooded spin baths atop continuous spinning machines. Excess liquid is pressed from rising cluster of filaments by plastic thread guide holder below each reel. Oval shows jumbo bobbins carrying 2½ pounds of yarn in one uniform unbroken thread. Operator is starting thread on empty cone for new package.





Above—Rayon yarn received at weaving mill in form of cones is transferred to loom bobbins by filling winding machines.

Right—Yarn is gathered from individual bobbins onto section beams which form basis of fabric's warp.

(All pictures taken in Industrial Rayon Corporation's new plant at Painesville, Ohio.)

for ladies' wear. This casein fiber is a likely substitute for wool, which it closely resembles. Improvements have been made in the manufacturing process. In 1935 the strength of casein fibers was only 10 per cent. of the strength of wool, whereas it is now more than 85 per cent.; and the elongation of the fibers was formerly only 15 per cent. of that of wool, but is now actually greater. Casein-base fibers, similar to Lanital, are made in Germany, Holland and England under the names of Tiolan, Lactofil and Casein Fiber, respectively.

Protein obtained from soy beans is similar to casein. Experiments on a small scale have proved that such fibers can be produced, but the process has not yet advanced beyond the laboratory stage in this country. Soy bean silk is being manufactured by the Showa Industry in Japan.

Because waste of natural silk occurs between the cocoon and the finished textile, research chemists have sought a profitable way to regenerate a useful fiber from this waste. Several methods for doing this have been developed recently and production of artificial silk from natural silk on a commercial scale is now under way in Germany and Japan.

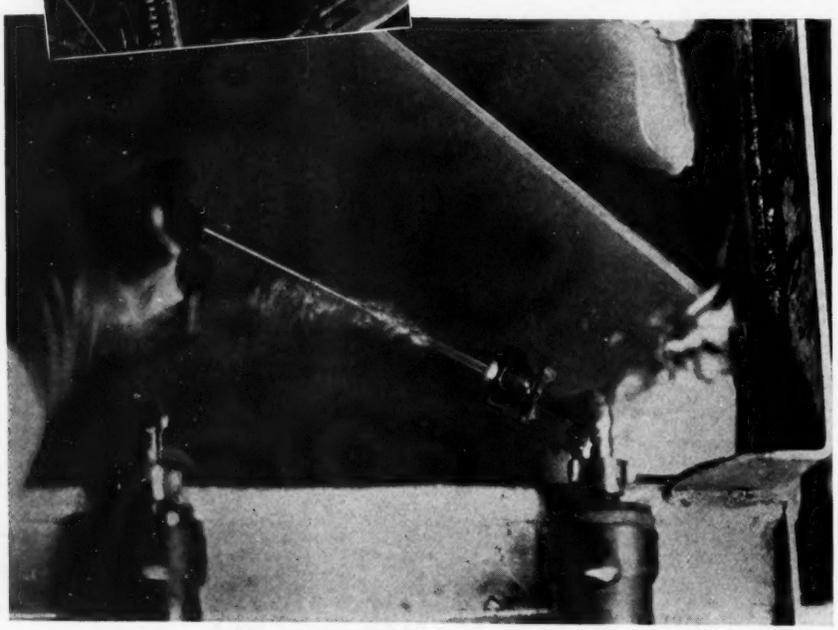
Rubber cannot be easily extruded as filaments but it can be cut into fine strips or bands which can be spun with natural textile fibers to form a very elastic yarn. A yarn of this type, Lastex, has been manufactured in the United States for several years and is finding increasing favor for use in textiles where high elasticity is a definite asset.

Above—Girl wearing evening gown, slippers and hat woven from glass. Of ensemble only dress is said to be impractical.

Left, circle—Model at 44th Congress of American Industry wearing bathing suit of new plastic with rubber qualities made from salt, coal and air.

Glass, for all its brittleness, makes a satisfactory flexible textile fiber. Nevertheless, research along this line eventually led to the discovery that if the molten glass is formed into very fine fibers, these fibers could be spun into yarns which possess sufficient flexibility for weaving purposes. At the present time, glass yarns are being manufactured in this country by two firms, and glass fabrics are finding use in the manufacture of filter fabrics, tapes and braids for the electrical industry, and various other fabrics both industrial and decorative. One of their great values is their non-flammability. Some day they may be improved to make them soft enough for personal use.

Left—Winding rayon into cones at Du Pont's Richmond, Virginia, plant. Operators tie thread with "weaver's know," and place all knots on face of cone.



Research has made many new and valuable developments in the processing of cotton, and these have had the effect of giving industry new fibers in the same sense as the synthetic fibers themselves.

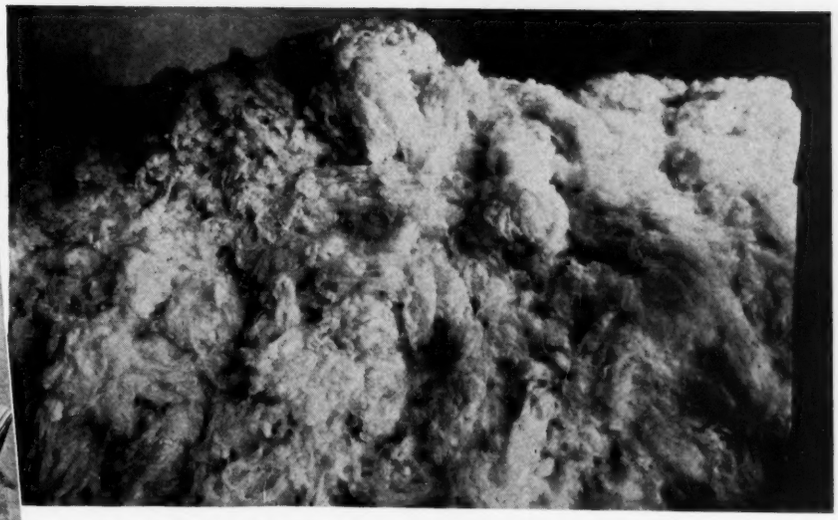
Wool-like effects are produced by treating the cotton with a solution of copper oxide in ammonia containing a very little free caustic alkali. Modifications of this treatment impart to cotton a permanent finish almost as lustrous as that of rayon.

Strong sulfuric acid gives cotton fabrics a linen-like appearance or produces a parchment effect. Cotton fabrics can even be made transparent without substantially affecting their softness by treating them with this acid at low temperatures.

The dyeing properties of cotton are entirely changed and at the same time

Left—First picture of actual chemical transformation of viscose liquid into rayon thread. Liquid is forced through many fine holes on spinneret. Blur, not visible to naked eye is coagulation or change of liquid into cellulose filaments which later become rayon thread as shown in rubber gloved hand.

(Photos, made at E. I. du Pont de Nemours' Richmond plant, courtesy of Du Pont Company.)



Above—Snia Viscosa, Milan, Italy, one of world's largest rayon producers, enlarges plant to produce this artificial wool from cow's milk. Left, girl wearing dress made of cow's milk wool fibre.

special waterproofing effects are produced by subjecting the fibers to chemical treatments which partially convert them into esters of cellulose. Cotton so treated is called "immunized cotton." It is unaffected by the ordinary direct cotton dyestuffs, but can be dyed with the colloidal dye dispersions used for acetate rayon. Novel cross-dye effects can be produced on fabrics made of combinations of immunized and untreated cotton.

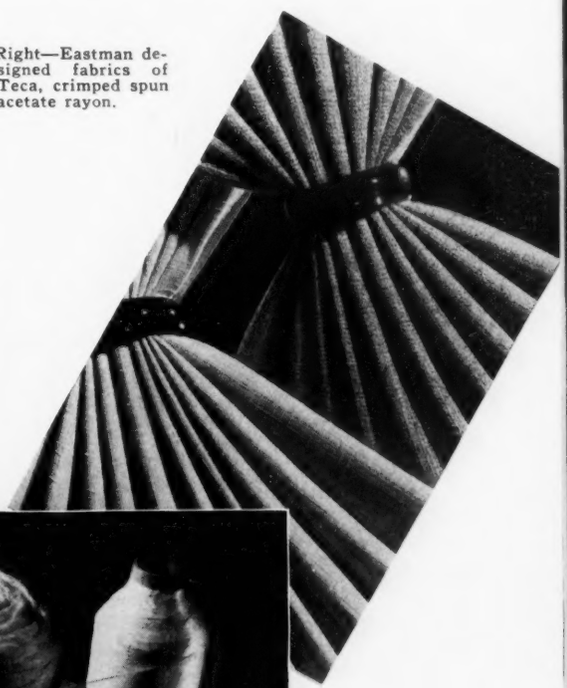
In addition to chemical changes in the cotton itself, new and useful finishes are produced in cotton fabrics by introducing various materials into or upon the fibers. The results are much more permanent than the usual starch or gum finishes long used by cotton textile manufacturers.

Solution of cellulose esters or ethers, familiar in modern lacquers, have come into increasing use as finishes for cotton. Cotton fabrics are impregnated with an alkaline viscose solution of the type used for spinning rayon and are then run through a weak acid solution to coagulate the viscose and produce a permanent finish on the cotton. An alkali-soluble cellulose ether may replace the viscose solution. Finished in this manner, goods can be washed many times without causing any substantial change in its appearance.

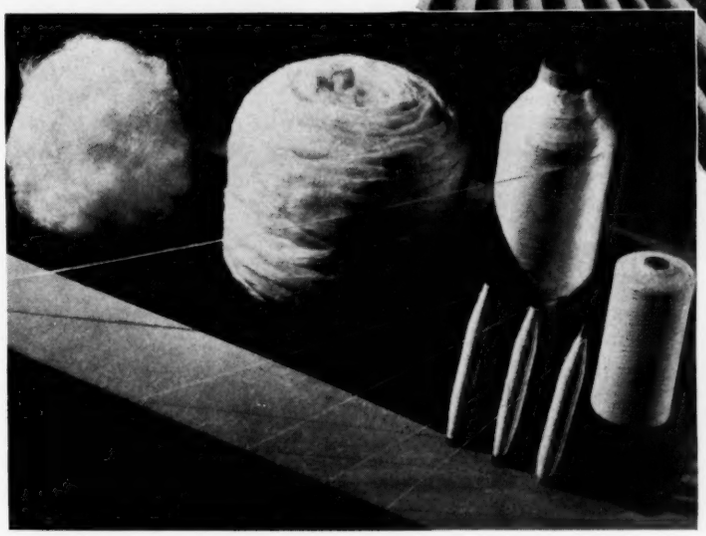
One of the most significant developments in recent years is the impregnation of cotton fabrics with synthetic resins. Several interesting results are produced in this way, but by far the most important at present is the added resistance to creasing imparted to the treated cotton. In addition to the property of crease-resistance, the resin treatment increases the fastness of colored cotton fabrics to washing. Moreover, schreiner and calender finishes, which usually disappear in the first wash, may be made substantially permanent by incorporating a synthetic resin into the fabrics just prior to the calendering. Resins may also be added to starch filling pastes so that the cotton materials treated with them will retain their original stiffness even after several washings.

With more or less success waterproof or showerproof cotton fabrics have been produced for a long time. Waterproofing has usually been accomplished by treatments with wax or with aluminum soaps formed in and around the fibers by alternate treatments with aluminum acetate and soap. Modern research has improved wax emulsions to such an extent that the waterproofing of fabrics by wax can be made much more effective. Certain new chlorinated waxes aid in fireproofing cotton fabrics as well.

Obviously the results of all these varied activities of research chemists create both opportunities and hazards for the textile manufacturer. Opportunities, because new variety and usefulness are provided to help his products meet human needs. Hazards, in opening pitfalls for the unwatchful whose smugness lets competition prepare their ruin. The moral, if moral there be to modern business competition, is that only research and science can provide the eternal watchfulness necessary to survival and the spur to Yankee ingenuity essential to success.



Right—Eastman designed fabrics of Teca, crimped spun acetate rayon.



Left — Teca crimped acetate rayon, made by Eastman-Kodak, is spun on same systems used for silk, wool, or cotton. Shown is loose Teca in staple length.

Airview of American Potash's Trona, Cal., plant which will begin bromine production in Spring. Searles Lake, brine source is in background. Right, marked map showing location of lake.

Searles Lake

Latest Source of Bromine

THE American Potash & Chemical Corporation of 70 Pine st., New York City, are now installing facilities at their plant at Trona, California, to recover bromine from products resulting from the evaporation of Searles Lake brine, and expect to commence production of both liquid bromine and alkali bromides during the coming Spring.

The bromine concentration in Searles Lake brine is about 12 times that of sea water, and since large quantities of brine are processed in the Trona plant for the recovery of potash, borax, soda ash, salt cake, etc., a considerable amount of bromine is available. For example, during 1939 over one billion gallons of brine entered the Trona plant carrying therein nearly ten million pounds of bromine, or, an average of over 13 tons of bromine per day.

Theoretically, the main Trona process is a cyclic one of alternate concentration and fractional crystallization in which the brine is ultimately evaporated to dryness, with separation and recovery of the various salts contained therein. Thus in certain of the concentrated liquors, the bromine concentration reaches 100 times that of sea water. It is from such concentrations that the bromine is to be recovered as a by-product, since at least its partial removal has been made necessary in connection with certain other developments.

The Trona research and engineering staffs, with their past experience in the successful handling of many complex chemical engineering problems on a large tonnage basis, have carefully planned this latest development with the aid of one of the foremost authorities in the bromine industry. An adaptation of the well-known process of chlorination will be used, followed by volatilization of the free bromine. Owing to the highly competitive nature of the market, it is planned to doubly refine the liquid bromine, thus assuring a uniform product of exceptional purity.

In addition to the production of liquid bromine, various technical and refined grades of alkali bromides will be crystallized, including the highest quality of sodium, potassium and ammonium bromides for the pharmaceutical and photographic chemical trades.

The equpiment to be used in both the bromine and bromide plants is of the most modern and efficient design. At this time, it is not intended to recover the entire quantity of bromine available in the Trona operations. The present installation is designed to produce from 2,000,000 to 3,000,000 pounds of liquid bromine, or equivalent bromides, per year.

Installation of another such major producer of bromine in the United States recalls forcefully the strides which domestic production has made during the last half century.

Until the work of Dr. Herbert H. Dow at Midland, Mich., in the late eighties, American industry was wholly dependent upon European producers for its supply of bromine and bromine compounds. Shortly thereafter, other companies entered into the domestic production of these products, so that this country soon was producing very close to its actual requirements.

Then came 1923, and the huge demand for bromine to be used in the production of ethyl gasoline. Bromine, in a sense, ceased to be strictly a fine and medicinal chemical, becoming overnight an industrial material requiring mass production methods.

During this transitional period in the industry, foreign material (almost exclusively German) crept back into American markets. For several years, the trend of import figures was again upward until 1929 when domestic production became geared to the demand, supplying very nearly, if not all, the entire bromine requirements of the United States.

Since 1929, production of bromine has steadily increased from sources in California, Michigan, the Ohio valley, and the Dow Kure Beach plant on the coast of North Carolina. In 1936, these sources produced 20,610,000 lbs., in 1937, 26,200,000 lbs., and in 1938, 33,340,000 lbs. It is estimated that of these quantities, approximately 80 per cent. was used in the production of ethyl gasoline.

Trona plant of American Potash is no "desert camp" as administration building pictured above will attest. Equipment used in bromine and bromide plants will be of most modern design.

Left—Brine pumped from lake wells at temperature of 72.5° F., moves through this pipe line for four miles to Trona plant. Pipe insulation prevents salt deposits through temperature changes.

Below—Lake brine enters storage tanks at Trona. Approximately 2,700,000 gallons are used daily. Executive quarters are shown, center background, and at right, in distance, are residences of employees.

The Chemical Tourist Visits

AT THE HUB

of New England Chemical Trade

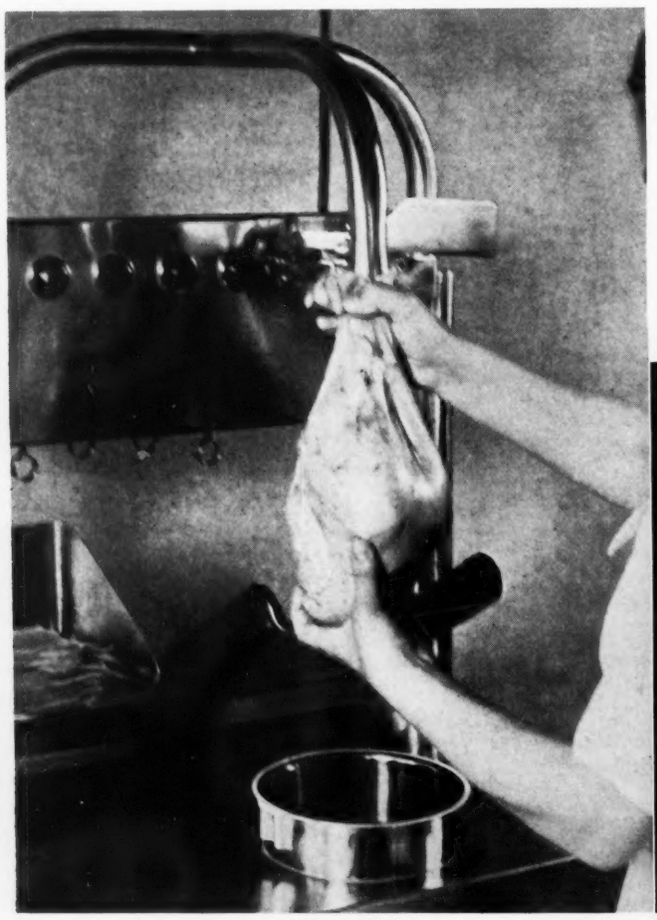
By Williams Haynes

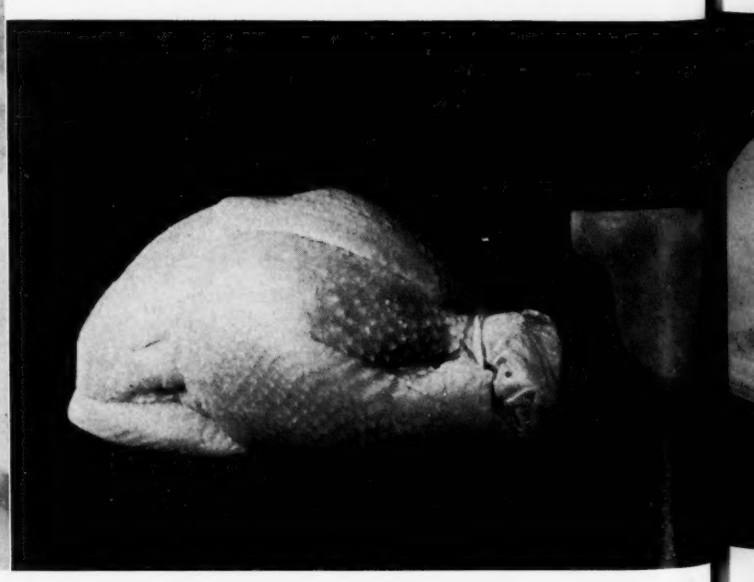
Part II

THIS sharp-focused specialization, carried on in quite a different field, the colloidal dispersions of rubber and latex complexes, is the base upon which another typical, growing Boston chemical business has been built. Two New England chemists—the one a Vermonter; the other a Massachusetts man; both graduates of Harvard with graduate work at M. I. T.—were thrown together during the World War in the common labor of perfecting better gas masks. They chalked up some notable triumphs in this new, rapidly changing field and agreed that plenty of chemical gadgets must be needed by peaceful industry that could be made better and cheaper if studied as chemical problems and produced according to the principles of modern chemical engineering. Accordingly Col. Bradley Dewey and Lt.-Col. Charles Almy, Jr., extended their Chemical Warfare Service partnership and the Dewey & Almy Chemical Co. was born in 1919.

Their idea was sound. They wisely picked a fertile field in which to specialize. And now besides the big new plant at Cambridge, they have modern producing units on the West Coast, in Canada, Australia, and Italy with sales offices strung all 'round the globe.

Their primary field is the canning industry to which they are specialists in can-sealing compounds. The rolled double-seamed edges of a can top, even when pressed in place, under heavy pressure, are wrinkled so that a sealing compound is required. These seals must meet exacting conditions. For example, the seal for a hot pack of liquid soup is obviously illy fitted for the cold vacuum pack of smoking tobacco—and





Out of Dewey & Almy's experience with fine rubber dispersions has grown the "Cry-o-vac" packing of meats—below a Cry-o-vac bag and dressed fowl which is slipped into it (right) and the air exhausted in the vacuumizing apparatus (left).

Just twenty years ago these two chemists, then officers in the C. W. S. —Dewey and Almy— joined forces to apply science and engineering to the production of "chemical gadgets" for industry.

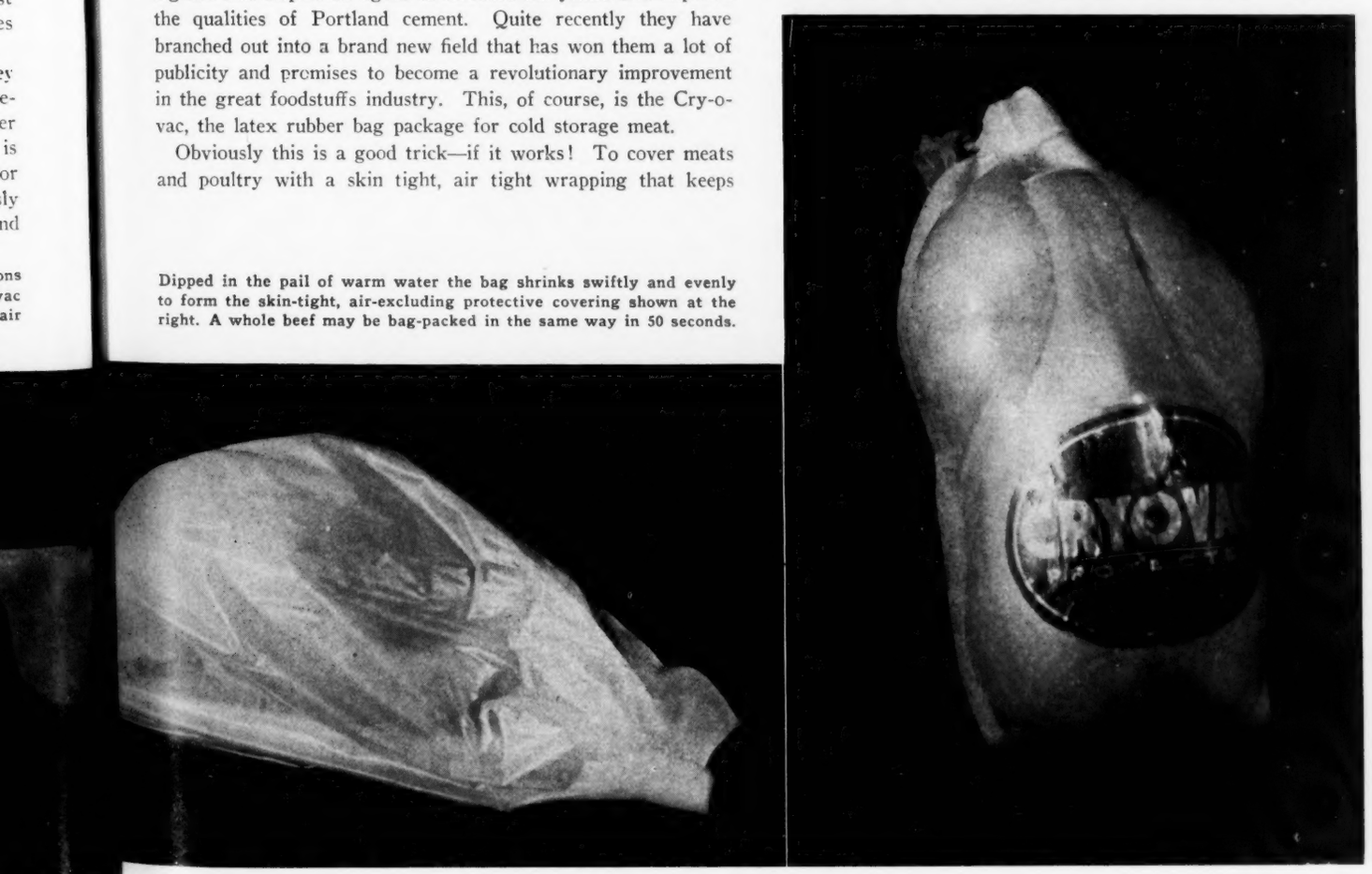
today more than a hundred different formulas are needed to meet all requirements. Moreover, every new product which is canned and every improvement in packaging machines calls for readjustments, some of them exceedingly drastic.

However, the canning industry is seasonal, so Dewey and Almy had a big dip in their production curve during the winter months. Accordingly, they began to work up some of the collateral lines of their intensive researches in colloidal dispersions.

An early extension was into the adhesives and impregnating fiber mats used in the shoe industry. Later came a grinding aid and dispersion agent to increase the yields and improve the qualities of Portland cement. Quite recently they have branched out into a brand new field that has won them a lot of publicity and promises to become a revolutionary improvement in the great foodstuffs industry. This, of course, is the Cry-o-vac, the latex rubber bag package for cold storage meat.

Obviously this is a good trick—if it works! To cover meats and poultry with a skin tight, air tight wrapping that keeps in the natural flavors, that keeps out the contaminating air, that prevents the "freezer burning" of the surface of the cold-stored flesh, is obviously highly desirable. It has been made to work; that is, after a lot of work in laboratory and a pilot plant which is a miniature cold storage warehouse.

The Cry-o-vac bag when expanded does not collapse like a child's balloon, but remains in the extended form so long as the temperature is below 60 degrees. When warmed it shrinks rapidly and evenly. My own arm, enclosed in a Cry-o-vac bag, thrust under a faucet of hot water, was suddenly encased like a frankfurter, in a smooth, tight, strong, transparent casing.



Dipped in the pail of warm water the bag shrinks swiftly and evenly to form the skin-tight, air-excluding protective covering shown at the right. A whole beef may be bag-packed in the same way in 50 seconds.

That is a most convincing demonstration; much more impressive even than to watch, as I did, the opening up of whole lamb carcasses shipped six months before from Australia and to hear the U. S. Meat Inspector present exclaim: "Good Lord! they look and feel just as if they had been slaughtered yesterday!"

During their experimental work Dewey & Almy have perfected not only the composition of the Cry-o-vac material itself, but they have also made new machines and devices to facilitate the quick and economical packing and sealing of all sorts of meats from squabs to a whole side of beef. They have put Cry-o-vac packed meats and poultry to all sorts of tests, storing them in scores of warehouses, letting leading packers keep them in their own cold dens; shipping them all over the world. The verdict that it does work has been found only after collecting a great stack of evidence. When you remember that 60 million chickens go into cold storage each year in the United States, you can guess that there is plenty of work for Cry-o-vac to do.

Charles Egan worked under Dewey & Almy in the C. W. S. during the World War and is today the firm's chief chemist.

The Beacon Company

Following a more orthodox pattern for a chemical specialty business, the Beacon Company is more widely typical of firms which manufacture cleansing agents, boiler compounds, maintenance chemicals, and processing materials for the textile, leather, rubber, paper and other industries. Many of these specialists specialize in a given consuming field, as in household compounds or automotive chemicals, in chemical aids for the textile or the laundry industries. Not so, the Beacon Company. Their basis is chemical in that they produce chemically allied products used in a wide variety of consuming fields.

Not long after the World War the old chemical specialty house of Gordon Brothers wound up its business and their star salesman, Philip Isenman determined to capitalize his knowledge and acquaintance by launching out for himself. This was the start of the Beacon Company. In 1928 his son George, recently graduated from M. I. T., went into the plant bringing a training and point-of-view which revolutionized old rule of thumb methods. Six years ago the father's health began to fail and a second son, Manuel, gave up a promising legal career so that when Philip Isenman died in 1934, he was ready trained to step into the vacant place as the head of sales.

Originally the Beacon line consisted of emulsifiers and wetting agents. One after another the various metallic soaps, a pretty range of the esters, a number of cosmetic bases were added. Now chief emphasis is upon synthetic waxes, and again the merits of sharp-focused research

Into consultation at "D. & A." is called that capital colloidal authority Prof. Ernst A. Hauser of M. I. T.

Another sort of consultation—T. T. (Ted) Miller, sales manager and Robert J. Gray, advertising manager, looking over a technical publicity campaign.

Dunbar Shanklin, in charge of the Container Division, studies a new can sealing compound.

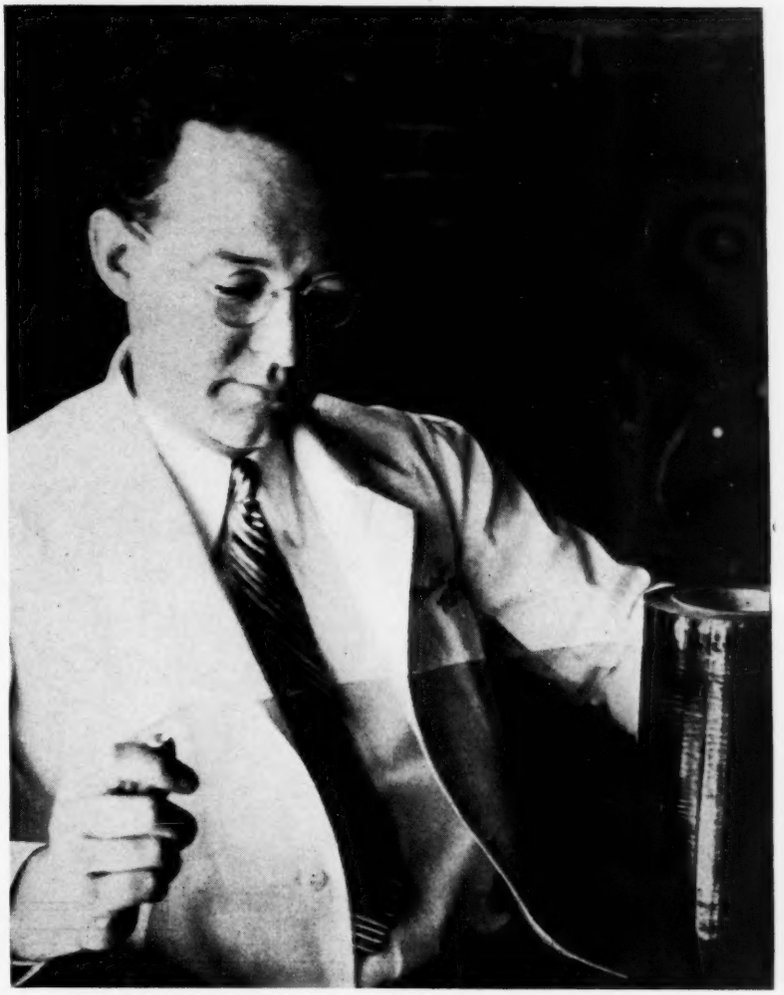
and painstaking study of production methods have been justified. A few days before I visited Beacon a comprehensive little technical handbook and catalog entitled "Sixty Synthetic Waxes" had just come from the printer. This not only tells its own story, but reveals by its very title how these interesting materials have come to dominate the one hundred and fifty products in the Beacon line.

Ultra-modernity distinguishes both the conception and the execution of the last enterprise typical of New England chemical activities which was visited in the Boston area. It is a true offspring of the depression. It is a research, rather than an operating, project. It deals with chemurgic problems arising from the industrial utilization of surplus milk.

The first casein paste paint was developed by Francis C. Atwood twelve years ago. Two years later he organized the Atlantic Research Associates with Governor John Winant of New Hampshire, who sought new industries for the Granite State, as silent partner. In 1937 Atwood was joined by Edward F. Maloney, formerly of Du Pont, and the laboratories in the handsome building in Newtonville with its staff of over thirty-five, became the chemurgic research department of the National Dairy Products Corporation, devoted to finding answers to the question "What can America do with 30,000,000,000 pounds of waste skim milk, by-product of butter-making activities in our creameries?"

As the Atwood-Maloney research team sum up: "We don't know all the answers. But we have some mighty good inklings."

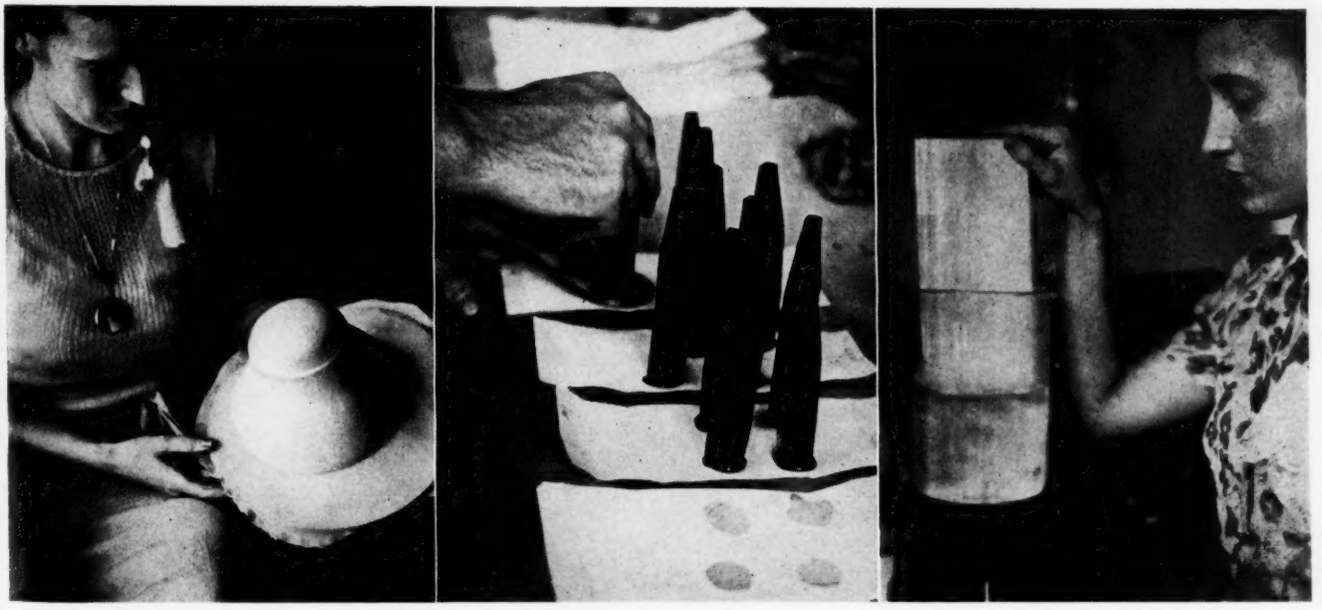
First, they have perfected a simple inexpensive machine suitable for the small dairy that recovers a premium grade of casein, freer from bacteria and residual acids, better adapted for chemical uses. What are these uses? We use about 70,000,000 pounds of casein a year—5,000,000 of them imported—and 87% of this goes into paper coatings. Consumption of casein paste paint has jumped in a dozen years from zero to over 4,000,000 gallons (a gallon of paste makes 1½ gallons of paint).

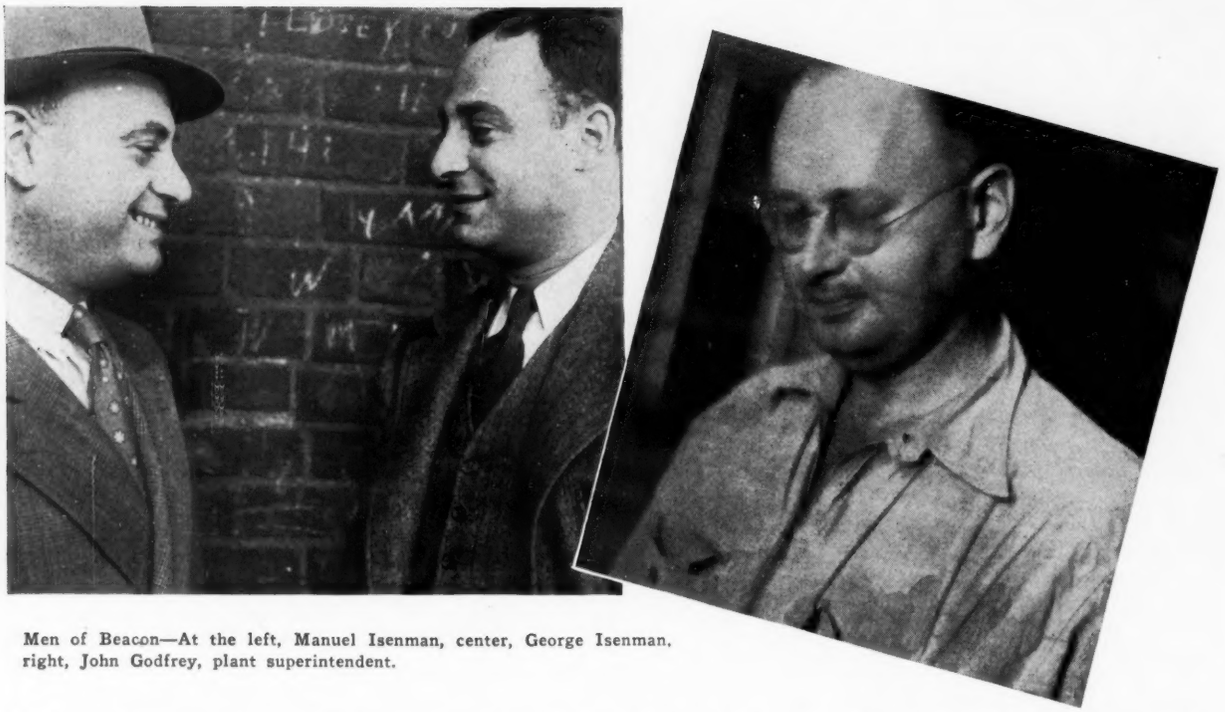


Edward Maloney of Atlantic Research Associates with a roll of casein transparent film.

The line of attack was thus plainly

Wool felt hat stiffened with the new waterproof casein sizing material "ara-size"—The good old sealing wax list of casein coated papers.—Testing casein varnish in boiling water for heat and moisture resistant qualities.





Men of Beacon—At the left, Manuel Isenman, center, George Isenman, right, John Godfrey, plant superintendent.

indicated. Quick-drying, water soluble casein resin paints were developed. Aracide was perfected, a new fungicide not only for casein paints but used also for making canvas firehose fungus-proof and now being tested for farm uses. Aratone, a new form of centrifuged, wet ground mica has been prepared to reinforce casein and other paints. The dairy regions are turning their eyes to casein paint for highway marking.

Casein As A Size

New employments of casein as a sizing material have had most careful attention. Due to new competitors the use as a paper coating has been shrinking, but it is expanding in the field of textiles, notable in stiffening felts for hats. Closely akin to the size is the glue, and casein glue has long been famous for its water resistant characteristics. Better glues result from intensive scientific study, and a conspicuous recent triumph is in fastening the inner soles of shoes.

Chemically casein is a protein and obviously there was a field for exploration in plastics and allied products. A transparent sheeting, colorless, odorless, and so specially useful for food packaging has been perfected and is now being produced commercially. The pioneer Italian work on synthetic wool has been closely watched. However, a typically American process looking to lower costs and better quality has been carried forward and a pilot plant is now operating in which this improved process is at work making the first of this newest synthetic fibre in America by American processes.

Modern Yankee Tinkering

These, we must agree, are all "pretty good inklings."

And they are quite characteristic of how New England is applying research in the specialty business to make new chemicals that create new markets, and a step further along they produce new goods for us all—modern Yankee tinkering!

Sandbag Preservation

Chemical Trade Journal, Nov. 24, '39, p. 408, summarizes methods for rot-proofing sandbags, as issued by the British Ministry of Home Security in an official circular. Two types of preservative are approved: a water emulsion of a tar or creosote distillate, or a water emulsion of creosote containing a fatty acid copper salt. A 25% creosote emulsion in water is suggested as a spray-applied coating, enough being applied to the sandbag to weigh not less than 20% of the dry weight of fabric. Such a preparation consists of 65 parts of creosote, 35 parts water, 1.2 of oleic acid, 0.8 of casein, and 0.36 parts caustic soda—this mixture is diluted to make a suspension of the desired strength. The coppered emulsion is similarly constituted, consisting of a copper soap (e.g., copper oleate) dissolved in a creosote emulsified with a special type of emulsifying agent, and is used as a 20% solution. Such preparations, it is stated, should be used while fresh and should not be diluted further than necessary.

Plastics from Cyanamid

Melamine—prepared from cyanamid or dicyandiamide by direct reaction with ammonia—is the base from which the Society of Chemical Industry in Basle (Switzerland), is producing plastic molding powders (under the mark "Melopas") and water-soluble resins (under the mark "Melocol"). Melamine is condensed with formaldehyde to form resinous products which are claimed to possess greater chemical inertness to corrosives and organic solvents than do other amine-aldehyde condensation products. The soluble resins are marketed both as adhesives of the casein type and as textile finishes, usually in the form of an aqueous emulsion or solution. (*Chemical Trade Journal*, Nov. 24, p. 405.)

New '39 Du Pont Products

Du Pont's Grasselli Chemicals Dept. has developed a flame-proof dust-collecting liquid for use in filters employed to remove dust from air drawn in from outside air-conditioned buildings, or air which is circulated within the structures. Another of Grasselli's new products, sulfamic acid, has found several quite different applications namely, in leather tanning, electroplating, and in weed control. Until a year or two ago sulfamic acid ($SO_2.NH_2.OH$) was a laboratory curiosity—it is a crystalline solid, completely soluble in water to form strongly acid solutions. Because its metal salts are, with few exceptions, all entirely water-soluble, this acid offers possibilities for improving operating conditions in the electro-refining of metals, particularly lead. Sulfamic acid, and several of its salts, were proven valuable in controlling weed growth during spring and summer of last year, by agricultural experiment stations. The sulfamates all confer flame-resistant properties upon materials impregnated with them (e. g., textiles, wood, etc.), which property is also valuable in a weed-killing compound, as the fire hazard of dry weeds and undergrowth is greatly diminished thereby. The acid has also been used for the pickling and subsequent tanning of leather.

Can a Purchasing Agent Afford to be Tough?

By Charles J. O'Conner

Vice-President, Reichhold Chemicals, Inc.

A few months ago, Robert Gould of Heyden Chemical posed the question: "Should P. A.'s Be Chemically Trained?" Here's another poser for the P. A.'s coming from a master salesman.

IN the reception room of the General Electric Company at Schenectady you are greeted by a very polite gentleman who quietly asks the nature of your business and directs you to the purchasing agent you are to see. In this room there are a number of very comfortable chairs where you can relax while waiting for your interview. On the wall there is a large sign bearing the following inscription:

Goodwill

Let us not forget that anyone who will visit us, anyone who will call us on the telephone, anyone who will seek our aid, offers to us the privilege of creating goodwill for the General Electric Company. Let us not throw away that privilege. Let us not rebuff the man who gives us this opportunity

OWEN D. YOUNG.

With that kind of thinking and that kind of consideration is it any wonder General Electric enjoys one of the finest backlogs of goodwill in this country?

About fifteen years ago, when I was a salesman for a company that was a large user of motor trucks, I received a telephone call from the purchasing agent for a well-known Detroit automobile and truck manufacturer. He asked if he at any time had been discourteous to me. I assured him he had not. Then he told me he had just received a thorough "going over" from the sales manager of his company because their truck salesman had been practically thrown out of our own office. In tossing this salesman in the gutter my home office had told him they were only taking an eye for an eye . . . only giving him the fastbrush for the fastbrush I'd been handed in Detroit.

Well, it wasn't true. I had been unable to sell this concern, but I always had been treated fairly and had a high regard for their purchasing agent. I had to get our sales manager to write their sales manager to tell them the statement was untrue and to say that if the truck salesman would return he would be given every consideration. This and other embarrassing "appeasements" were all made necessary by a little undue muscle on the part of a self-appointed tough guy. It shows how far such a muscle act can snap back at times.

Of course, you have all heard the definition of an assistant purchasing agent . . . "A mouse growing up to be a rat." And, of course, you have all met that type of purchasing agent whom only a mother could love. But when you stop and think about it a purchasing agent has a pretty tough job. He has to say "No" several hundred times more often than he can say "Yes," and some purchasing agents just haven't yet learned how to do it gracefully. I say "yet" because I firmly believe modern business is becoming more and more conscious of goodwill building (and wrecking) possibilities of the purchasing agent's job and is taking steps to see that the men on the job are able to say "No" without giving the impression that a kick in the face goes with it.

Unrecognized and Unsung

Then, too, purchasing agents sometimes have a very legitimate gripe over the fact that the part they play in the success of a business goes unrecognized and unsung. I know one purchasing agent who was smart enough to buy about two years' supply of Chinawood oil in the neighborhood of 5c. During the second year the price advanced to 12c. Partly because of this low cost one of the company's salesmen was highly successful and was rewarded with a series of loud Hallelujahs and a very nice trip to Europe. Did the purchasing agent who helped make this business possible get a trip to Europe? No, he got his usual dish of big, raw, red raspberries without cream or sugar.

And then, too, there are those irritations sometimes laughingly called "salesmen." Just because the girls admire the manly marcel of one of these perambulating pedagogues, or because his ears are larger than Gable's, or because he knows that both he and the P. A. are Eta Bita Pies is not sufficient reason for the P. A. to crush him to his breast and hand him an order.

Oftentimes the purchasing agent has so much work on his desk which must be completed that very day it is impossible for him to see salesmen at the time, and he asks the salesman to be excused and suggests that he return the next day. This sometimes gives the salesman the impression that the P. A. really doesn't want to see him.

The average purchasing agent is willing to give the average salesman an average of ten minutes to tell his story and this should be sufficient for the average sales presentation, if you cut out the allegedly funny story, the superfluous comment on the weather and the inane wise crack about foreign affairs.

Of course, the purchasing agent is heir to the same human jitters and periods of mental vacuum as the rest of us. The next time you see that glassy glaze come over the eyes of some P. A. as you are unraveling your sales yarn don't put it down to churlish habit. Perhaps his son, Tommy, the apple of his eye, is threatened with mastoid, or perhaps friend wife has put the squeeze on him for a new mink benny and he is mentally rehearsing the sarcastic remarks he intends to make when he gets home for dinner.

The salesman expects the purchasing agent to be fair with him and the purchasing agent also is entitled to fair dealing from the salesman. The average P. A. doesn't worry much whether a raw material is 14c per pound or 12c per pound, but he is very much upset (and justifiably so) if he discovers that the product he has been buying for 12c per pound is being sold to a competitor in similar quantities at 11¾c.

No, sir, if he wants to keep his job, the purchasing agent cannot afford to be tough. And, in this connection, it will probably be well for all of us to remember that all is not tough that thunders. Also, it is comforting to know that many a purchasing agent who acts like a five ton truck around the office is only a trailer at home.

The Pulse of Opinion—

Gordon H. MacKelcan

Vice-President, Innis, Speiden & Co.

I feel there are three outstanding reasons why the chemical industry does not have much interest in the Chemical Exposition:

1. The date. The early part of December is a bad time, because we are all engrossed in the renewal of contracts and we just haven't got the time to spend at the exposition. I suggest a date in either April or May.

2. The industry has felt generally that this was a machinery or equipment show. The noise of grinding mills, etc., was terrific. If, as suggested, the chemical people might be together on, say, the second or third floor, it might help.

3. When we used to exhibit we felt that most of the inquiries came from curiosity seekers and young people studying chemistry. I don't recall any worthwhile leads that developed into business. This opinion was shared by others. At best the products we manufacture and handle are raw materials to the consumer; although representing finished products to us and it is difficult to show them in an attractive manner. Soda Ash, bicarbonate of soda and many other chemicals all look alike.

I don't say we would be interested in exhibiting next year but I don't say that we wouldn't, if conditions would be such that we would feel there would be any advantage to us in so doing.

Howard B. Bishop

Penn. Salt Mfg. Co.

We are convinced that there is a field for a strictly chemical show and that alternate years of display of chemical equipment would make an excellent arrangement.

There are three groups of people to whom such an exhibit would be educational and of great interest: the customers, the employees, and the stockholders. The chemical industry has made such wonderful strides in the past 25 years that it is more and more difficult to keep abreast with the latest developments. Such an exposition would be extremely helpful to all concerned and would greatly increase the prestige of the industry in the eyes of the public.

You are to be congratulated upon your efforts in promoting this worthwhile idea.

Reprint of an Editorial in Chemical Industries, January, 1940, page 14.

The Chemical Exposition

The 17th Exposition of Chemical Industries held last month at the Grand Central Palace in New York was one of the most successful of the series and certainly was the one most productive in the last decade of new business for the exhibitors. Despite a stricter admission policy on the part of the management, over 40,000 attended, a figure very close to the all-time record of the last ten years.

Chemical manufacturers, it appears to us, are "missing a bet" by their failure to participate in greater numbers. The few who did report satisfactory results, but several executives did express the opinion that lack of broad participation by the industry detracts seriously from the value of the show to chief chemists, buyers of chemicals and others not primarily concerned with equipment.

The chemical manufacturing industry does not lack suitable material to exhibit profitably at the Exposition. In 1933 at our booth we displayed 263 new chemicals placed on the market by our advertisers in the two previous years; last month we showed over 400. At each of the last three expositions our booth was crowded day and night by visitors seeking data. At each exposition this display developed hundreds of worthwhile inquiries for chemical makers.

There is no doubt but what tremendous latent possibilities exist. We do not presume to know the answer to just what form any new program should take. Perhaps a definite chemical section, dramatizing the industry's contribution to the industrial advancement of the country, or, perhaps, an entire floor devoted to chemical displays, or possibly a show without equipment displayed and held in alternate years may be the best solution.

For several reasons it may not be desirable to attempt to do a general public relations job for the industry at such an exhibit. But there is a "chemical public." With this group there is the distinct possibility of improving the industry's relations, plus a golden opportunity for the companies participating to develop valuable inquiries for old and new chemicals and particularly the latter.

With the recent show still fresh in our minds the time is now opportune for individual and company expressions of opinion on the subject.

Prof. Marston T. Bogert

Columbia University

I too was somewhat disappointed in not seeing more numerous displays of chemicals at the recent Exposition.

Inasmuch as the show was described as an "Exposition of Chemical Industries," it was probably entirely appropriate that it should be given up almost exclusively to the industrial manufacturing and equipment interests, and I should therefore have understood that purely chemical displays of a character to interest the university laboratory research man were not to be expected. Nonetheless, I regretted the absence of such great corporations as the Du Pont Company, for example, and their displays of research progress in the development of their striking new discoveries in the synthetic organic field.

Dr. Eric C. Kunz

Executive Manager, Givaudan-Delawanna, Inc.

It is difficult to say just what should be done to make the annual chemical exposition a more successful one for the strictly chemical industry. It all depends on what the purpose of the exposition is. In our case, all our chemists and our engineers spend one afternoon and one evening at the exposition mainly to study and get acquainted with any new apparatus or contraption that may be available and of usefulness in our factory; so from that point of view, the exposition serves our purpose very well. Our chemists also look over any new product which the chemical industry may have produced with the idea that it might serve as a raw material for our purposes.

If, however, the main object of the chemical exposition is to establish better public relationship between the industry, that is the strictly chemical industry, and the public at large, then you probably would have to think of something of a more permanent nature; something along the line of what Du Pont is doing at Atlantic City. It would mean not only to show a new product, but also the relationship of this new product with any other industry or products of an industry in which this new chemical plays an important part. Perhaps you would also need a permanent man to answer the various questions of the visiting public.

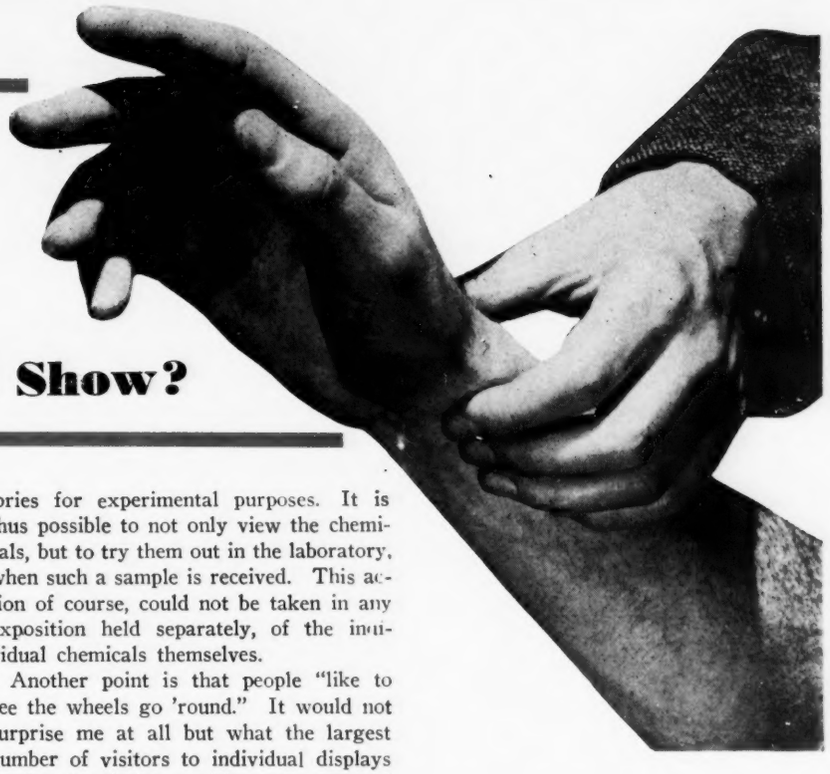
In New York, probably the Chemists' Club should maintain such a permanent exposition.

E. Rosendahl

Glyco Products Co.

It has always seemed surprising to me that in view of the tremendous advances made by the chemical industry in this country, there have been so few exhibits of a chemical nature in the biennial Chemical Exposition held in New York.

Why Not a Strictly Chemical Show?



I have discussed this matter with several chemical manufacturers who have all given me substantially the same reply, namely, that they felt that the Chemical Exposition has developed into a Chemical Equipment Exposition. Without going into arguments as to the whys and wherefores, I certainly am of the opinion that an exposition devoted solely and exclusively to chemical manufacturers would not only be welcomed by the chemical manufacturers themselves but also by chemical users who would be able to get first hand information on the progress of chemistry directly from the producers.

It goes without saying that such an Exposition should be solely for the users of chemicals and not for the general public, if it is to be of real value to the exhibitors and the visitors. An exposition for the general public would almost certainly develop into a miniature World's Fair which, though pleasing to the eye and, perhaps, the ear, would be of no benefit to those whom we are trying to help.

Yes, Mr. Editor, let's have a Chemical Exposition which *is* a Chemical Exposition, where only chemical manufacturers are allowed to exhibit and where only those definitely interested in commercial chemistry are invited to attend.

L. Drew Betz

W. H. & L. D. Betz,
Chemical Engineers

The idea of holding an exposition strictly chemical in its scope would, in my opinion, be a mistake. I do believe however, that one floor or one section of the usual chemical exposition could very well be devoted to the display of chemicals and chemical products.

To ask people to come distances simply to see a display of chemicals in a bottle, in my humble opinion, would be asking quite a lot, particularly in view of the fact that manufacturers are usually eager to distribute complimentary samples of new products to various industrial laboratories for experimental purposes. It is thus possible to not only view the chemicals, but to try them out in the laboratory, when such a sample is received. This action of course, could not be taken in any exposition held separately, of the individual chemicals themselves.

Another point is that people "like to see the wheels go 'round." It would not surprise me at all but what the largest number of visitors to individual displays at the chemical exposition are attracted to those booths which are equipped with moving machinery. Another thing to be kept in mind is the fact that people cannot actually see, in their own plant, larger pieces of chemical engineering equipment. They can only see pictures of these in catalogs. This in turn would be conducive to paying a personal visit to see such equipment in operation more so than to travel distances simply to see a sample of the chemical displayed or some type of product manufactured with the aid of such a chemical.

It is therefore my opinion that any consideration to a separate exposition of a strictly chemical nature, could best be forgotten for the time, but I do believe a separate section of the usual chemical exposition devoted entirely to the exhibit of new chemical products, would attract quite a number of visitors, who had already traveled distances to inspect the equipment.

Editorial Note: The two following letters, the first from the president of an important producer of industrial chemicals, and the second from a well-known purchasing agent of a very large chemical concern, are reproduced because of the wealth of thought they contain even though we have withheld identification.

I visited the Exposition of Chemical Industries and was struck again, as I always have been in the past, at the fact that the actual manufacturers of chemicals are so much in the background while the makers of all kinds of machinery and apparatus dominate the Show. The reason for this may be the difficulty of exhibiting the ordinary run of chemicals, as compared with the ease with which a moving piece of apparatus can be shown.

This Company has never been a strong believer in exhibiting its products, largely for this reason.

As usual, you are a step ahead of the Chemical Industry. I agree with you that there should be some separation from the strictly chemical exposition and the equipment exposition. However, I do not think that the two should be separated. Perhaps it would be best to have one floor of the Exposition showing the chemical development and the rest of the Exposition for equipment.

Fortunately, I have had experience on both sides of this question. For many years I purchased nothing but chemical equipment, but at the present time I am interested only in the chemicals.

Originally, the Exposition, as you know, was practically 100 per cent. assigned to equipment and people interested had an opportunity of discussing with the various equipment manufacturers the various phases of new chemical equipment being produced, which in line with other discussions with such representatives gave a very well rounded picture of the materials coming on the market.

At the last Exposition, the strictly chemical exhibitions were mixed in with the equipment exhibitions and I am inclined to think that people interested in chemicals missed some of the Exposition due to the fact that the strictly chemical exhibitions were rather few.

Formulation of Printing Inks

By Charles F. Mason, Ph.D.

Printing ink manufacture might aptly be termed an industry within an industry so tremendous is the volume produced. This authoritative, behind the scenes article reveals the highest grade ink-making materials, methods and formulae that are in use today

IN an earlier report thirty-one distinct group names for inks were listed, among which five are similar in composition in that the base or vehicle was an oil and resin. These are Printing, Lithographic, Mimeographic, Ceramic and Intaglio. Because printing inks are used in the largest volume of any in this group and their production comprises a separate industry by itself, they will be described here.

Printing inks are made in every shade from black through the basic colors of red, orange, yellow, green, blue, violet, and in rare cases white. It is not uncommon to see advertising displays with bronze, aluminum, or other metal applied in the form of an ink.

For convenience these inks are divided here into three classes:

1. Lithographic
2. High quality (for depressed surface printing)
3. Ordinary type and matte plates (typographic).

Lithographic inks are applied to metal surfaces like tobacco cans, paint pails, wax cans, and many others used for containers. In two or three colors, they are not only attractive, but they form a protective coating for the metal and eliminate paper labels which mar easily and may be lost if water comes into contact with them. A lithographed can is still an advertisement long after it has served its purpose.

Typographic inks are used for newspapers and magazines and are usually in one color: black. High quality inks for depressed surface plates are used for advertising displays and for the rotogravure process.

Three basic requirements are quick drying, resistance to water, and absence of corrosive effects upon the metal printing plates, which usually consist of copper, nickel faced copper, zinc, aluminum, or type metal. Others are lack of offset and absence of clogging between elevations and depressions of the design. These are related to time of drying and lack of tackiness and when present result in finished copies sticking to one another in piles and shutting down of the presses to clear the plate.

They might be classed as special types of anhydrous oil paints because they consist of bodied or thickened drying oils, in which sufficient resin is dissolved to impart the necessary adhesion. Catalysts known as driers are dispersed to accelerate the process of drying and pigments or aniline dyes are dispersed or ground in to impart the desired color. One essential difference between them and paints is that the content of resin is much smaller in inks than in paints.

The characteristic, which makes the printing ink industry a separate and distinct one from paints is that the specialties are more numerous and each ink must meet more exacting specifications of color, viscosity and ease of application than outside or interior paints. In that the materials comprise oils, resins, driers, pigments and dyes the principal ones used will be mentioned and described separately.

These are linseed, china wood (tung), rosin oil, perilla, soybean, and mineral. Linseed has always enjoyed the greatest popularity and this is justified for many reasons of a technical and economic nature. Rosin oil is usually dark in color and is used only with black inks. Tung oil dries too fast and requires carefully regulated conditions of heat and time during bodying to avoid gelatinization. Perilla and soybean have been adopted to some extent as substitutes for linseed, and mineral oils are used only to aid in the solution of synthetic resins, which are rapidly coming into use.

Oils are bodied by heating for a definite time at a definite temperature range in the presence of a metallic drier and the required amount of resin. Some blow in air after this operation is completed, but this practice is being omitted because darkening of the product has been attributed to it. This operation has been an outside business for varnish plants, who sell the product to printing ink manufacturers located in large city buildings and who cannot risk the fire hazard.

The driers are the same as those used by varnish makers, the resinates or linoleates of lead, manganese, cobalt, and vanadium. Others for special purposes are borates and acetates. The powdered or paste forms are upon the market and are sold as fused or precipitated driers. They disperse more easily than the pure metallic oxide and are very convenient for avoidance of weighing very small quantities.

The linoleates are used most widely in printing inks perhaps because tackiness and an increased acidity are feared with the resinates. The linoleate only acts as a carrier of the metallic oxide, which should be present in from one half to two per cent. of the total. Failures with driers cannot be attributed more to imperfect dispersion in the oil than to the wrong choice of a drier or to an insufficient amount of it.

Attempts have been made to sell salts of zinc, iron and cerium but progress has been slow; the only new drier being a salt of naphthenic acid,—a by-product of the petroleum industry, which is enjoying an increased consumption.

Pigments and Colors

As each producer has a wide choice from an ever increasing number of materials for this purpose, there are sure to be omissions in those listed below but a classification and the names of some will show how they differ from the paint industry.

1. Earth colors (natural). Siennas, umbers, ochres.
2. Artificial colors. Iron blues, organic lakes, chromium and cadmium yellows.
3. Extenders (diluents). Precipitated barium, sulfate, or aluminum hydrate. Whiting.

Acid dyes	*Basin dyes*
Acid violet	Methylene green
Acid blue	Chrysoidine yellow
Naphthol yellow	Safranine
Naphthol green	Methyl violet
Nigrosin	Rhodamine
Acid green	Fuchsine
Grocein scarlet	Bismarck brown
	Methylene blue
Resins	
Rosin	Cumar resin
Limed rosin	Phenol Formaldehyde
Ester gum	Alkyd resins

Rosin and its two modified forms, limed rosin and ester gum, are being displaced by synthetics of which cumar is used the most widely. Though it is brittle it is tar offered in purified form, and being uniform in quality and devoid of acid, the livering of basic pigments and corrosion of printing plates is avoided by its use. From reports it is the only resin now used in rotogravure inks.

Before synthetic resins became available many ink makers fused the fossil resins to obtain them in an oil soluble form and to lessen the acidity of the product, but today these are purchasable in soluble form blended with synthetic resins of different types. They are bought either in solid form or in a viscous condition, where the drying oil has been blended at the source.

Equipment

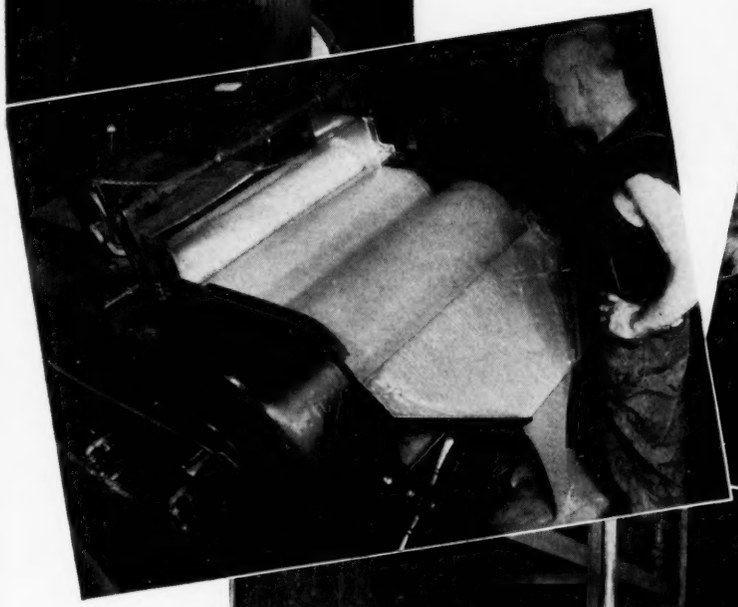
The machinery necessary for incorporation of the ingredients is a mixing device —motor driven—having revolving fingers or brushes and a mill equipped with polished, water cooled, steel rollers for final grinding to the consistence and smoothness desired. Routine tests upon each batch of a tested formula are comparison of colors with desired ones and measuring the drying time, which is sensitive and may vary with conditions.

Formulae

The formulae of printing inks are legion and as in the case of paints different combinations of different materials may approach the desired physical characteristics of a competitor's product and be sold in its stead. Naturally the producers upon changing the percentage of one component say that they have a new formula and in fact they have; hence those listed below may fit one purpose and not another. A few specialties for rubber and cellophane are added for those to whom they may concern.

Polymerized Tung Oil (240-280)	37
Linseed oil (boiled)	19
Carnauba wax (refined)	4
Turpentine (spirit)	7
Bronze powder	33

Left—First step in making printing ink is mixing dry color (pigment) with varnish. Yellow mixture is shown here.



Above—Red ink pouring off three-roller mill. Ink is run through mills from 3 to 20 times depending on particle fineness required.

Above—Grinding ink on mills like this one produces a paste, pigment particles being thoroughly wetted with varnish.

Right—Petroleum and carbon black being dumped into mixer to produce newspaper inks.

(All illustrations accompanying this article courtesy Interchemical Corporation.)

ADVERTISING PAGES REMOVED

The boiled linseed oil is added to the polymerized tung oil and the mixture is kept at 200 degrees Centigrade for two hours during which the wax can be melted in and dispersed by stirring. After cooling the bronze powder is moistened with the turpentine and stirred in before milling for smoothness and uniformity.

This is a typical lithographic ink, which dries entirely by oxidation; there being a minimum of volatile solvent present, the turpentine for thinning and wetting the color. It has been used upon cardboard, where drying is aided by penetration.

Wool grease (lanoline)	2.00
Spindle oil	1.00
Lubricating oil (heavy)	42.00
Water	45.00
Carbon black	8.00
Induline	0.80
Oleic acid (red oil)	1.20

The spindle oil is warmed by indirect heat and the wool wax is stirred in. This or larger quantities can be made and set aside for use as needed. Likewise the induline is ground into the oleic acid and kept as stock for the final product. The wool wax solution is stirred into the lubricating oil and the water added next, or otherwise there would be no mixing, because the wax aids in emulsification. When a smooth emulsion showing no traces of oil globules is obtained the carbon black and ground color are stirred in and the mixture milled.

This is a typographic ink and is to be used upon absorbent paper because it must dry by penetration, the reason being that there are neither volatile solvents nor drying oils present.

Rosin	41
Alcohol (denatured)	20
Turpentine (spirit)	9
Ammonia (concentrated)	12
Soft soap (potash)	10
Grocein scarlet	8

In this case volatile solvents are present and it falls into the class of Intaglio inks, associated with the rotogravure process sometimes termed photogravure. The plates upon the rotogravure rolls are opposite in relief from those of typographic ones. The presence of ammonia and soft soap with the solvents alcohol and turpentine is claimed to be an improvement over simple solutions of cumar in benzol or benzol and chlorinated hydrocarbon mixtures, which affect the operator's health.

The rosin in particle size of about the diameter of peas is dissolved by agitating in the alcohol and turpentine mixture; care being taken that it does not settle to the bottom and form a gummy mass, which is difficult to disintegrate. The other components are then added with stirring and the final product is passed over the rollers as usual. It is obvious that the acid of the rosin present is neutralized to a degree by the ammonia and alkaline soap, thereby avoiding the troubles mentioned in earlier paragraphs.

Inks for Cellulose Coatings

Titanium oxide	63
Spar Varnish (long oil)	6
Lithographic oil	29
Paraffine in vaseline	2

The paraffine in vaseline is made by melting 94 lbs. or ounces of vaseline by indirect heat and stirring in 6 lbs. or ounces of paraffine while keeping the mixture at the boiling point of water. The spar varnish is made by melting 100 lbs. of Akco resin, melting point 125-130 Fahrenheit and adding at the proper time 7500 lbs. of tung oil and continuing the application of heat with stirring for one hour. The lithograph oil is a bodied linseed oil.

This ink will adhere to cellophane and be tack free in four hours. Another one of a similar nature but of a less pasty consistency is

Linseed acids	8.00
China wood oil	7.00
Akco resin	11.00
Petroleum naphtha	4.00
Chrome orange	70.00

Obviously the varnish is one of the synthetic resin type and after the resin is melted and the oils added the temperature must be kept at 200-210 degrees Centigrade for one hour. After cooling it is thinned with the naphtha and the pigment is ground in. Usually the varnish can be purchased and few attempt the actual production of it in the printing ink industry.

Below are two examples of modified fossil copal resins in mixtures of drying oils and mineral oils, which are claimed to be serviceable in rotary newspaper presses, where speed, lack of offset, absence of excess penetration or show-through and non-clogging of the printing plates are essential.

Carbon black	16
Resin (Copal synthetic)	9
Mineral oil (14 E. 50 deg.)	34
Rosin oil (3 E. 100 deg.)	19
Milori blue (1-1 in oil)	8
Mineral oil (same as above)	9
Linseed varnish	5

The second, third and fourth items comprise a varnish, which should be made separately by heating until the resin is dissolved. Likewise the color is purchased ground in oil or made separately upon another mill. The balance is simple following by milling.

Carbon black	14
Varnish (copal above)	55
Mineral oil (14 E.)	29
Milori blue (1-1 oil)	2

As in all products, where price is a factor in competition, the trend has been to introduce water with emulsifying agents for printing inks. They are of a cheap variety and may be of service where the printed design is not exposed to the weather but it is clear that advertisements printed upon cardboard and hung from the front of a street car in all kinds of weather will soon have colors running and indistinct letters if soaps are present.

In closing it should be clear that the small printing ink manufacturer should stick closely to a few specialties, of proven worth which have been fitted to the customer's needs and enter new branches only after the mixture has been tested carefully. Even though large corporations in this field have the advantage of a technical staff to oversee and guide the uniformity of the products, smaller producers can have prosperous businesses if they observe the precautions mentioned above.

THE BOOKSHELF

Graphic Presentation, by Willard C. Brinton, Brinton Associates, N. Y.; 512 pp., $5.00. From cosine to cartoons, a compendium of all ways of expressing figures and facts in charts and pictures—an excellent job exceedingly well done.

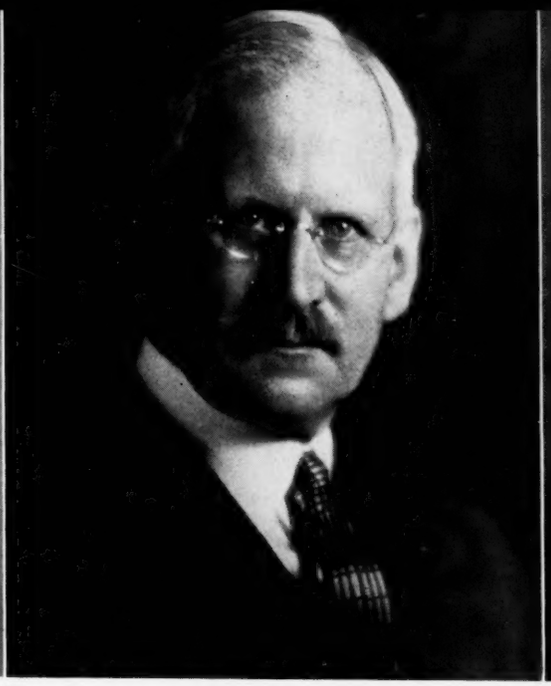
Science Today & Tomorrow, by Waldemar Kaempffert, Viking Press, N. Y.; 275 pp., $2.50. Dean of our science newsmen tackles the big basic unsolved questions of physical fact and with skill and charm makes them crystal clear to the layman.

Human Relations Manual for Executives, by Carl Heyel, McGraw-Hill, N. Y.; 253 pp., $2.00. A meaty limit book that sketches the principles and stresses the practice of this timely and significant subject.

Rutherford, by A. S. Eve, Macmillan, N. Y.; 488 pp., $5.00. The man of science rarely furnishes good biographical material, but the vivid personality of this great chemist. the fullness of his career, the importance of his work, are an exception. Dr. Eve has not always made the best of this rich matter, but the book is not one you can afford to miss.

Le Mirage de L'Iode, by L.-M. Bernard; Societe d'Editions Geog., Marit., et Colon., Paris, France; 169 pp., 36 fr. Author Bernard has given some years to an economic analysis of the world iodine industry and present volume is the second he has written on the economics of the iodine and related chemical markets. Monograph is a chronological economic history of the French iodine industry (extraction of minerals from seaweeds), and its battle for survival in competition with cheaper North and South American iodine.

Dr. Edward R. Weidlein, Director, Mellon Institute of Industrial Research, receives '39 A. C. S. Pittsburgh Award for distinguished service to applied chemistry.



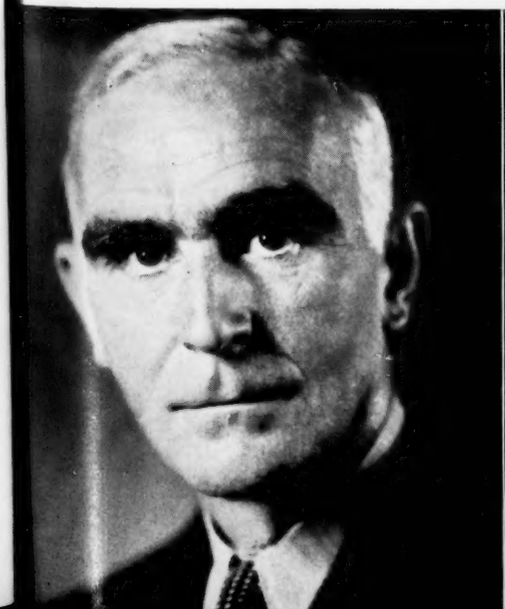
Dr. S. C. Prescott, Science Dean, M. I. T., heads Institute of Food Technologists which holds first meeting June 17-19.

Raymond E. Gaylord, appointed general sales manager, Rumford Chemical Works. He was former vice-president, Cream of Wheat.

"Headliners" In the News

Left, James S. Adams, elected executive vice-president, Colgate-Palmolive-Peet Company.

Right, A. J. Broggini, new Pacific Coast manager, E. B. Badger & Sons Company, designers of equipment.

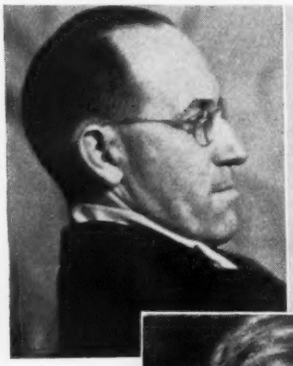


Arthur Blaikie Purvis, head, British Purchasing Commission, announced formation of Anglo-French Purchasing Board, unifying allied buying.

Haywood P. Cavarly, assistant branch manager, National Lead, who completed fifty years' service with company on Jan. 2.

Henry G. Sidford, vice-president, National Lead, also celebrated 50th anniversary with company, sharing Jubilee Dinner with Mr. Cavarly.

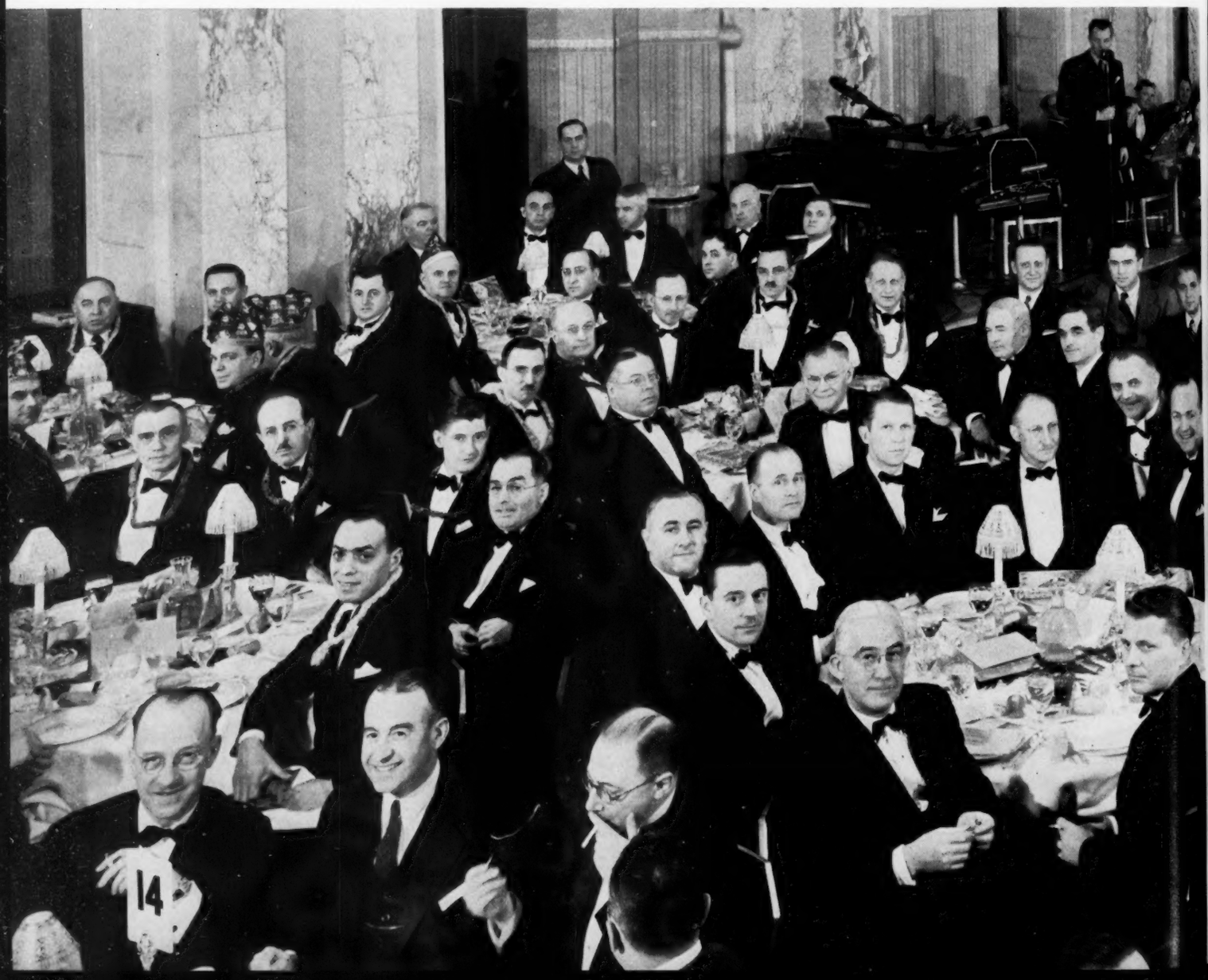
Compressed Gas Manufacturers Hold 27th Meeting

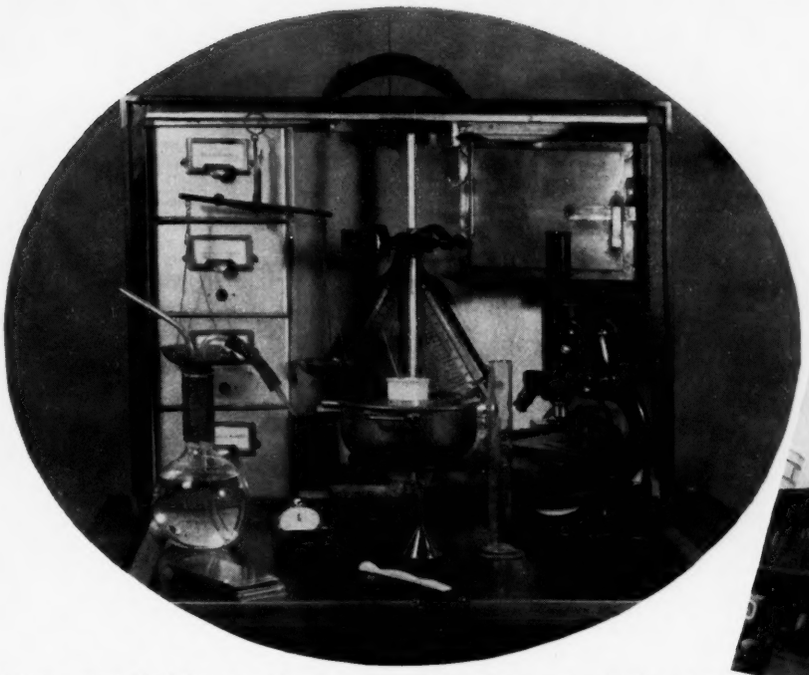


Top left, R. J. Thompson, Kinetic Chemicals; below, John A. Kienle, Mathieson Alkali, vice-president; F. R. Fetherston, secretary of Association. Directly to right, Col. John C. Minor, Taylor, Wharton Iron & Steel.

Above, left center, William J. Dugan, The Matheson Co.; to his right, J. R. Eldridge, Virginia Smelting; top right, John C. Crowe, Air Reduction; below, the well known A. Cressy Morrison, one of the speakers at the convention.

Highlight of one of the most successful annual meetings ever held by the group was the dinner on Jan. 23 in the Basildon and Jade Rooms of the Waldorf-Astoria, N. Y. City.





Above—Portable laboratory fitted in case 24 x 19 x 8", weighing only 45 lbs., designed by Foster D. Snell, Inc., Brooklyn, N. Y., for trouble shooting in clients' plants.

Right—New type display sign features button lenses of Du Pont's "Lucite" methyl methacrylate. It offers several times greater visibility with less power.

ADVERTISING PAGES REMOVED

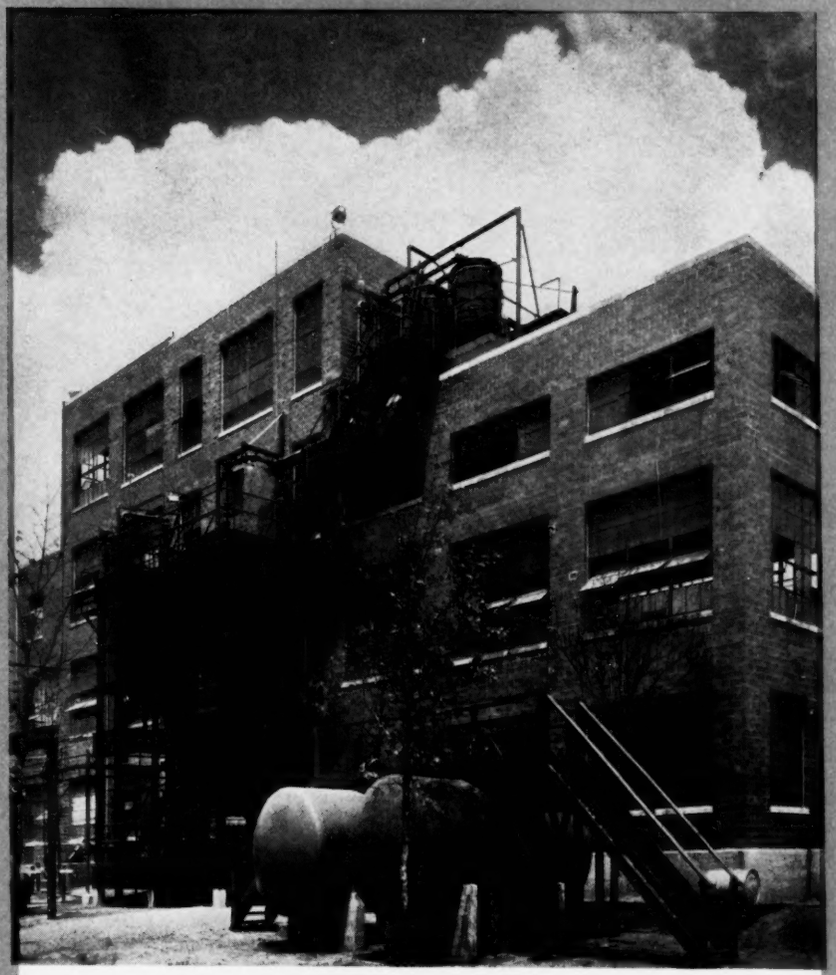
Chemical Salesmen Elect New Officers

Extreme left, the retiring president, Joseph M. Wafer, Industrial Chemical Sales Division, West Virginia Pulp & Paper, showing gift presented to him in appreciation of his highly successful administration; next, the incoming president, DeWitt W. Thompson, Mathieson Alkali, at the right, W. J. Weed, Niagara Alkali, newcomer on the executive committee.

Center, above left, Walter Merrill, Joseph Turner & Co., the new vice-president, and C. O. Lind, Dow Chemical, treasurer. At the left, Williams Haynes, founder of the Salesmen's Association, who spoke briefly; to his left, "Doc" Dorland, Dow Chemical, who presented the gifts to the retiring officers. At the extreme right, George T. Short, Wishnick-Tumpeer, new executive committee man.

The December meeting of the N. Y. Section of the A. I. Ch. E. held at Keen's Chop House, Dec. 19, hears the well-known H. O. Chute discuss "Desert Chemicals."

PLANT OPERATION AND MANAGEMENT

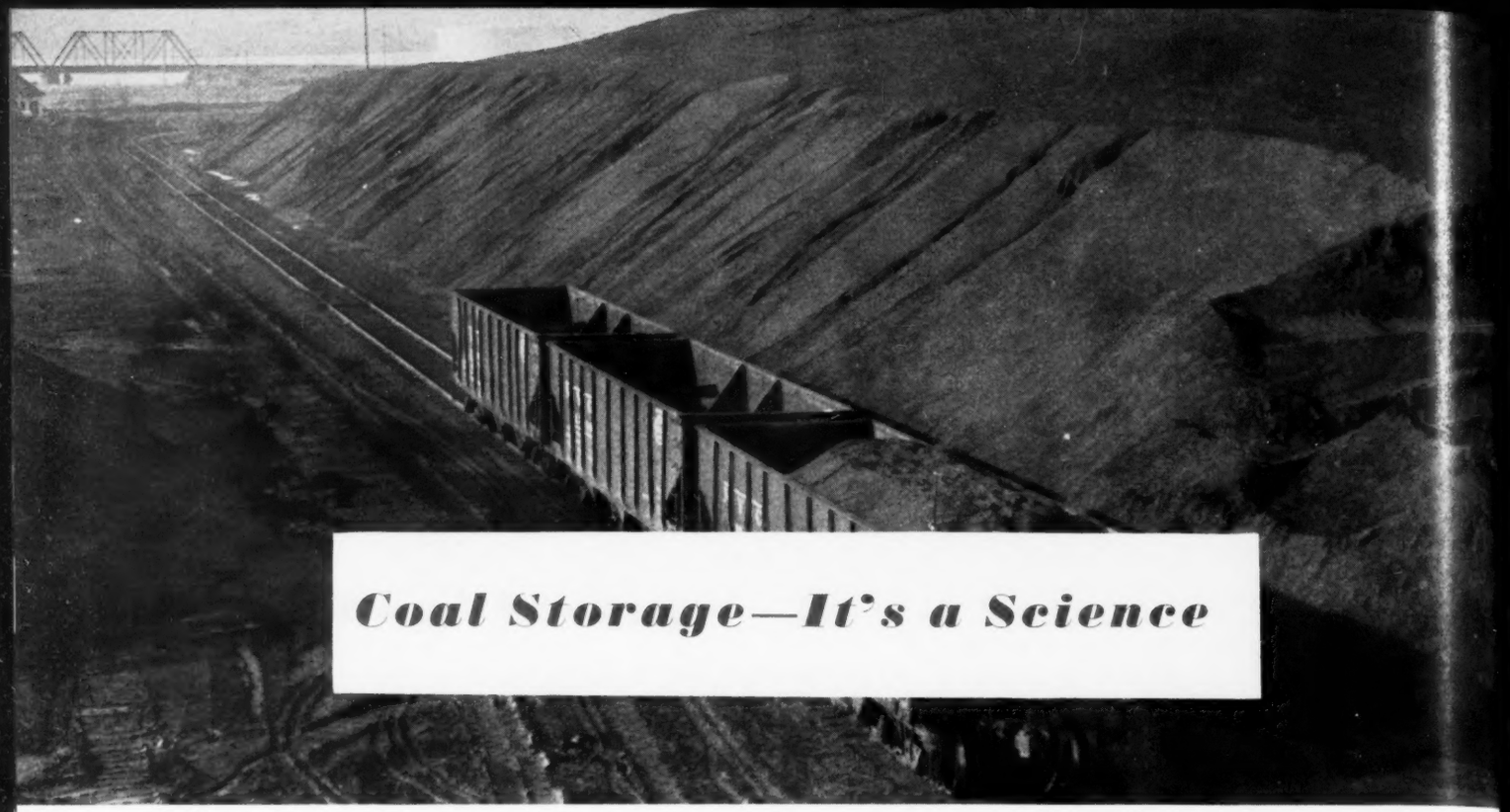


New Hercules Chlorinated Rubber Plant

Hercules Powder Company recently erected this new building at Parlin, New Jersey, for production of chlorinated rubber, used extensively in the formulation of paints and other industrial materials. Plant, now in operation, replaces former unit which was too small for expanding demand.

DIGEST OF NEW METHODS AND EQUIPMENT FOR CHEMICAL MAKERS

CHEMICAL INDUSTRIES



Coal Storage—It's a Science

By Norris E. Coalwell

Superintendent, Service Departments
The Dow Chemical Company

THE efficient and economical handling and storage of coal is a major problem of American industries, especially those which, like The Dow Chemical Company at Midland, Michigan, consume a very large tonnage daily. Dow's solution for this problem has attracted considerable attention and comment, not only because it is simple and feasible, but also because it is accomplished with such a low overall capital investment.

The system developed by Dow takes advantage of known factors and is based upon actual experience. It has been in use during the past three years and has been found to possess unique advantages in every respect.

Until 1937, the coal was stored in conical piles of eight to twelve thousand tons each. Temperatures were taken weekly and an average rise in temperature of one-half degree per day was noted. This is caused by the chemical reaction between the oxygen in the air and the constituents of coal.

In the past, coal was dumped directly from lake boats. Slack was piled loosely just as it fell, allowing free entry to air. In such a pile, natural classification soon caused a separation of fine and coarse particles, the former being more firmly compacted than the larger pieces. When a second load was piled on the first, the same thing happened, likewise with each succeeding load. A glance at the cross section of the conical pile in the illustration on page 180 shows the oblique stratification caused by this method. Between each fine layer, lies a coarse one which, being loosely compacted, constitutes a sort of flue, or series of them. In case of fire these operate in much the same fashion as their counterparts in chimneys. In other words, the warm air rising through them allows cold air to filter through the coal at the bottom of the pile and feed the flames.

Norris E. Coalwell

When Dow Chemical found it necessary to maintain in its Bay City yards large quantities of coal for long periods of time, it faced the bugaboo of stock pile fires. In solving its own problem, Dow learned and tells here much that can be of value to you.

It was often found necessary to re-pile the coal in order to eliminate this fire hazard. This involved expense, but the cost was minor compared to that sustained when fires started, as anyone who has had the experience of subduing a blaze in a large coal pile can testify.

Until three years ago, however, the conical method of piling still seemed the most economical, but when at that time it became necessary to carry a larger stock for a longer period of time, various other possibilities in storage procedure were investigated. Dow's new problem involved moving the coal from where the freighters discharged it to a point 250 or 300 feet away, and storing it in such a manner that additional handling would not be necessary, and it could safely be

The pick-up. The caterpillar tractor and carryall capable of carrying eight tons per trip. Note horizontal stratification of storage pile.

Reclaiming coal from storage for haul to Midland. Capacity from crane to car is 250-300 tons per hour.

allowed to remain in such storage for many months.

With these facts in mind, the present procedure was evolved. This method is illustrated in the accompanying picture story and briefly described below.

Coal is now stored in horizontal rather than oblique strata. This eliminates the formation of flues and reduces the fire hazard. There is little need to fear spontaneous combustion since coal is packed so tightly that little of the fire-breeding oxygen can filter in. Without oxygen, the coal, of course, cannot oxidize, which, it will be remembered was the cause of the original heat. In the three years that Dow has been storing its coal thus, no rises in temperature have been noted, even after 18 months of continuous storage.

Below—General view of Dow's coal handling and piling equipment.

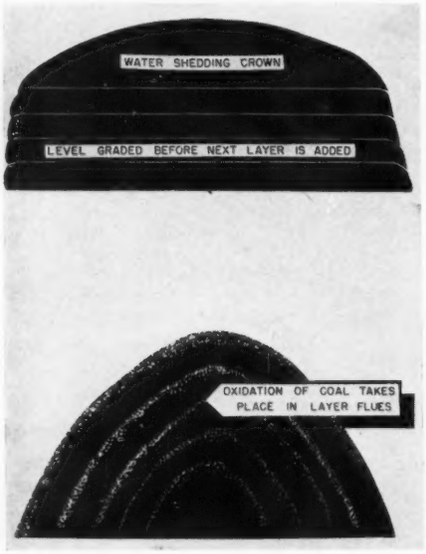
Since this method of piling coal gives an extremely compact flat plateau, it is necessary to round off the top to ensure proper drainage. With the correct pitch it is possible to achieve this with no appreciable increase in the moisture content.

For loading, transporting and compacting, one caterpillar tractor

Left—Spraying hopper bottom cars with Dowflake Calcium Chloride to prevent the freezing of coal to the sides of the car.

hauling a carryall and shoving a bulldozer is used. This unit handles an average of 130 tons per hour. The cab is equipped with a heating and air conditioning system of Dow's own design and has other unique features that contribute to the comfort of the operator.

Another costly item in many coal handling programs is the freezing of coal to the sides of hopper-bottom railroad cars. Dow's remedy consists of spraying the insides of cars during cold weather with a solution of its Dowflake Calcium Chloride, non-freezing even at temperatures well below zero Fahrenheit.

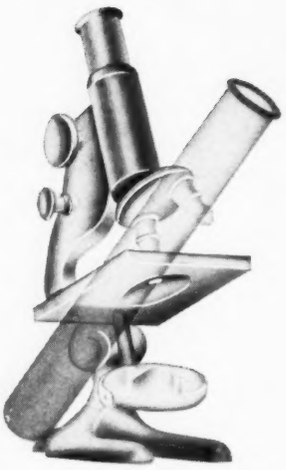


Upper, idealized sketch showing horizontal stratification; lower, oblique

A thorough investigation of other techniques of stocking and handling coal, has convinced The Dow Chemical Company that their method is one of the most efficient and least costly ever developed. Additional proof of this lies in the fact that many branches of American industry are increasingly sending their representatives to Bay City to see, to learn, to profit from Dow's experience.

New Wax Product

A synthetic product designed to replace Montan Wax in rubber compounds and other preparations, has been introduced under the name "Synprowax." The chief advantages of the new product are said to be in ease of dispersion in rubber compounds and in lighter color. The physical properties are similar to Montan Wax, some of these properties are as follows: melting point, 85° C.; acid value, 23.4; saponification number, 78.5. This product is available in both lump and granulated form. According to the manufacturers, "Synprowax was developed to meet the demand in this country for a substitute material to replace one of those difficult to import at present due to conditions abroad."



NEW PROCESSES

Flame-Hardening Process

The Linde Air Products Company has developed a new hardening process. By use of this process, known as the vertical combination process, a higher degree of hardness in steel and alloy iron rolls, mandrels, etc., is obtained. It is said that the hardness of a 65 to 70 carbon steel cylindrical object can be raised to 90 or better on the Type "C" Scleroscope.

Copper Acetate

A continuous production method for the manufacture of copper acetate on industrial scale is described by R. Lantié in the *Bull. Soc. Chim., France*, July, '39. The method depends on the fact that copper reacts with cupric chloride to form cuprous chloride which is readily oxidized by air on heating to 60-100° C. The cupric chloride acts as an oxidizing catalyst and is totally regenerated.

The plant used is a wooden vat provided with a perforated false bottom, covered with a porous material (such as vegetable fiber). Copper scrap is heaped on this false bottom and hot air blown through from below. At the same time, a cold saturated solution of cupric acetate containing 50-100 g./l. of cupric chloride is allowed to flow into the vat at a point near the bottom. The tepid and concentrated solution of the acetate overflows through a cock towards the top of the vat into a crystallizer, where the slightly soluble copper acetate crystallizes and the mother liquor reinforced acetic acid is returned to the bottom of the vat. The circulation of liquors and therefore the manufacture of copper acetate is continuous.

New Printing Process

In the art of printing, ever since its beginning, the primary objective has been to leave a solid deposit on paper but for reasons of convenience and limitations of materials man has always used liquid inks. Because of this centuries-old dependence on liquid inks, printers have had to contend with a great many problems connected with drying.

Recently there has been developed a new process which employs the printer's objective, a solid ink, which dries immediately upon touching the paper and therefore eliminates the drying period and all of the problems connected with it.

This new type of ink is, in its natural state at ordinary temperature, the solid that other liquid inks approach as they dry. In the process that employs these inks the press, ink fountain, metal rollers and plate cylinders are kept warm by the application of low-temperature heat, about 200 degrees Fahrenheit. This heat keeps the ink fluid until it touches the colder (room temperature) paper where it instantly solidifies.

In melting and then solidifying, the ink undergoes no chemical change. It does not dry by absorbing oxygen from the air, or by evaporation of volatile solvents, or by penetrating into the paper.

With the use of this ink printing speeds are limited only by the top speed at which the web can be run, no offset webs are needed at even the highest speeds. There is no penetration into even the most absorbent papers. All of the ink stays on the surface, producing stronger solids, leaving cleaner highlights, and eliminating strike-through. The printing plates are left clean after each impression, for the touch of the cold paper freezes the ink and lifts it bodily from the plates. This plus the fact that the ink does not gum or harden on the press makes washups unnecessary except to change color.

This "Velo Cold Set Process," as it is called, has been developed by J. M. Huber, Inc., and is now available for rotary presses to which it is particularly adapted. Its release for flat-bed presses will be announced in the near future.

Ethyl Polychlorobenzene

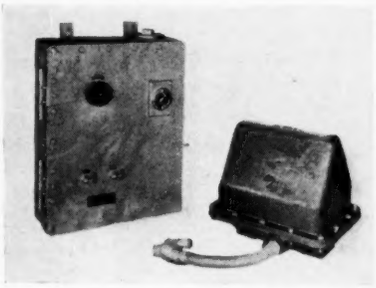
A new highly stable liquid for a variety of industrial uses has recently been made available. The new chemical is composed of approximately equal proportions of ethyl tetrachlorobenzene and ethyl pentachlorobenzene. The material is described as having excellent electrical properties. It can be boiled with aqueous solutions, including 20% caustic soda or 20% sulfuric acid, without appreciable change. Boiling range is high, 270-320° C. Heating with copper, iron, or aluminum at 200° C. produces no change or corrosion of the metals. Properties of the chemical suggest its application as a heat transfer fluid, dielectric for electric condensers, fluid for pressure control mechanisms and non-flammable lubricant.

"Aqua-Sorber" QC46

The "Aqua-Sorber" is a unit specifically designed and constructed to dehumidify the air in commercial and industrial work spaces. It consists of a portable metal cabinet equipped with a centrifugal exhaust blower mounted in the upper part of the unit and automatically controlled by a humidostat. In the bottom of the unit is set a grilled opening through which the air is drawn and moisture discharged into a drain-pipe or removable catch-basin. A specially prepared filter bed holding a charge of dehumidifying agent is fitted on the grill. This agent, as it absorbs water, deliquesces and slowly trickles through the filter bed as it continues to become hydrated, finally running off as dilute solution into the drain. The "Aqua-Sorber" is also made in a non-mechanical model, operating on the draft principle. This light-weight cabinet is especially suited to the control of moisture in stock rooms, where moisture-absorbent materials must be kept, and is inexpensive to maintain.

Explosion-Proof Vibrators QC47

A new explosion-proof vibrator, for use in plants where atmospheric conditions are highly inflammable or explosive, has recently been announced. The vibrator, a heavy, pulsating electro-magnet, is fully encased in a thick, electric-furnace steel case, with ground joints, and with an armored cable lead. The remote electric control panel containing a rectifier, operating switches and rheostat for controlling the vibrator's power, is fully encased in a cast iron case, with ground joints and explo-



sion-proof fittings. These vibrators are used for attachment to bins, hoppers, chutes, etc., to prevent arching over and hanging up of material, and to insure free flow. Explosion-proof models are useful where atmospheric conditions are dangerous, such as in oil refineries, chemical and paint works, and flour mills.

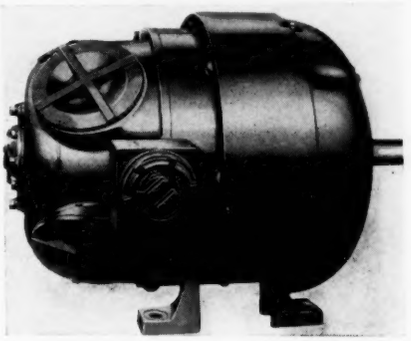
Explosion-Proof Motors QC48

Ohio manufacturer now offers explosion-proof D. C. motors up to 75 H. P. Recent changes and improvements over the original design makes available a complete line of these motors, from one H. P. up. All are said to be tested and approved by Underwriters' Laboratories,

NEW EQUIPMENT

Inc., for Class I, Group D, hazardous locations. They are designed to be run safely in the presence of methane, acetone, benzene, the several alcohols, common pyroxylin solvents, and of various petroleum distillates (gasoline, etc.).

Basic requirements for motors to operate safely in the presence of flammable vapors require that any flame originating within the motor cage itself must not spread to the open air and that said cage enclosure must have ample strength to withstand, without loosening of joints or



bursting, the highest internal pressure which might develop. In addition, the motor enclosure must not become overheated, should a burnout occur, to a temperature sufficient to ignite surrounding vapors. These motors are claimed to meet fully the requirements just stated.

High-Strength Filter Paper QC49

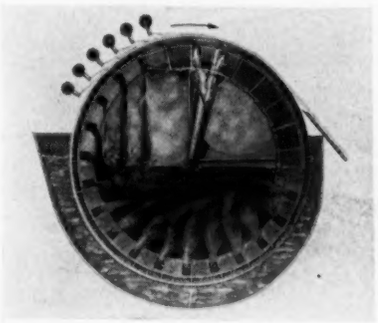
Claimed to possess the highest wet strength of any paper on the market, this material is said to possess exceptionally long fibres and is treated with a patented wet strength process. Only a few millimeters thick, the paper allows tight locking of filter press plates and frames to prevent leakage. It shows high strength in solutions of acid with pH values as low as 2.0, and in solutions up to 15 oz. per gal. of caustic soda, according to the maker.

Black Liquor Pulp Washer QC50

A newly designed black liquor pulp washer has recently been placed on the market. The key to the excellent work that is reported for this equipment is probably the valve. It is the largest valve ever put into a pulp washer and is so designed as to do two things: (1) permit unrestricted flow of liquor through the wire cover into the drum, and (2) provide for sharp separation between strong black liquor and weak (wash) liquor.

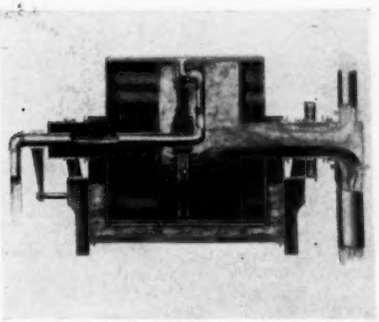
The valve consists of an annular ring encircling the inside of the drum in line with outlets from each section. Each of these outlets in turn has two ports in the valve, one leading, the other trailing, which allows the liquor to enter the drum and then out through one large trunnion as indicated in the illustration.

For washing purposes, arced gates are set at any desired point on both sides of the ports to cut off the flow into the drum and divert it through a hopper and out



through the opposite end of the drum through a pipe, which also serves as the valve adjusting arm. Thus, the wash liquor can be sharply separated from the strong liquor at any point desired.

Other features of the washer are: outlets midway between the ends of the drum,



providing shortest travel and assuring uniform sheet formation and highest washing efficiency; non-clogging, low pressure nozzles which lay a fan-shaped spray on the sheet; drum designed to act as a receiver, keeping liquid and air separated, thus reducing foaming of liquors.

Chemical Industries
522 Fifth Ave., N. Y. City.

I would like to receive more detailed information on the following equipment: (Kindly check those desired.)

QC 46	QC 49
" 47	" 50
" 48	

Name .....

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Packaging

Containers OF THE MONTH

Left—Non-skid coating to prevent rugs slipping on polished floors is Nestlene. Product can be applied like paint, drying within two hours, says The Nestlene Company, North Hackensack, N. J. Secondary advantage is the fact that dust, grit cannot seep through rubber-like coating to scratch floor.

Left—Mallinckrodt Chemical adopts clamp-top metal drum to replace slip-cover and friction-top cans in sizes over three gallons, where feasible. New containers are stronger, easier to unpack, air and moisture proof.

Above—Persistent consumer complaint is met by A. E. Staley Mfg. Company through built-in pouring spout on syrup cans. Simple cap fits into spout opening to prevent leakage. At left is close-up of spout with cap removed.

Below—Peninsular-Lurton Company, Pensacola, Fla., re-packages its pure gum spirits of turpentine in this new lithographed container, designed and produced by American Can Company.

Below—Recent re-designing job was done by Carter's Ink Company, Cambridge, Mass., on pint and quart ink containers following pattern of mucilage and paste bottles. Family now harmonizes.

Handling and Shipping . . .

Tentative Program for 10th Conference on Packaging—Irwin D. Wolf to Conduct Clinic—Housewives Opinion Survey—Informative Labelling Will be Discussed—Specialty Packages on Display—Plastic Age in Retailing is Forecast by Macy's Dr. E. Freedman

Alvin E. Dodd, president, American Management Association, announces the tentative program of the 10th Conference on Packaging, Packing and Shipping to be held concurrently with the 10th Packaging Exposition at the Hotel Astor March 26 to 29 under the sponsorship of the Association.

A feature of the program this year will be a packaging clinic conducted by Irwin D. Wolf, vice-president of the A. M. A. and donor of the Wolf Trophy for excellence in packaging. Mr. Wolf will be assisted by a clinic panel drawn exclusively from the membership of the Society of Designers for Industry, including such prominent designers as Egmont Arens, Clarence Cole, G. W. Blow, Tom D'Addario, Frank Gianninoto, Clarence Hornung, Martin Ullman, George Wilmet, Bond Morgan and William O'Neil.

Label Data

Inez La Bossier, of the New Jersey Home Economics Extension Service, at New Brunswick, will report on a survey conducted among New Jersey housewives to determine what should be the character of the most often used packages, and the information that should appear on labels of consumer goods.

Joseph Givner, Assistant to the vice-president of Sears, Roebuck & Co., will talk on "Dividends from Informative Labelling." Howard Ketcham, president of Howard Ketcham, Inc., New York, will discuss "Pre-testing Packages" from the standpoint of determining color, shape, materials, etc., in package design.

A. Q. Maisel, Editor of *Modern Packaging*, and D. S. Hopping, director of sales of the Packaging Division, Celluloid Corporation, will jointly conduct a session devoted to presenting the various packaging materials placed on the market within the past year.

W. R. M. Wharton, Chief of the Eastern Food and Drug Inspection of the U. S. Department of Agriculture, will conduct a clinic session on the "Pure Food, Drug and Cosmetic Act in Operation" and answer all questions concerning the new law.

A leading color authority will discuss "The Use of Color in Merchandising," and C. W. Browne, manager of the marketing service of the U. S. Printing and Lithograph Company, will discuss "Package Merchandising Through the Label."

A "Question and Answer Session" also will be a part of the program. A "brain trust" has been assembled which covers almost the entire field of shipping containers and shipping. The group will be prepared to answer all questions asked by visitors to the session.

Others On Program

Other speakers include Dr. Frank Campins, chemical engineer, of National Starch Products, Inc., who will talk on adhesives; W. B. Lincoln, Jr., development engineer of the Inland Container Corporation, who will discuss interior packing for shipping; and G. T. Henderson of the Hinde & Dauch Paper Co., who will talk on the technical aspects of liner board manufacture. Other discussions will cover such topics as: periodic testing of containers; the usefulness of shipping department appliances and packages and containers from the standpoint of the receiving clerk.

Display of New Packages

More than 2,000 manufacturers, many in chemical specialty field, contribute 30,000 new packages now on display at Modern Packaging exhibit galleries, 122 East 42d st., N. Y. City.

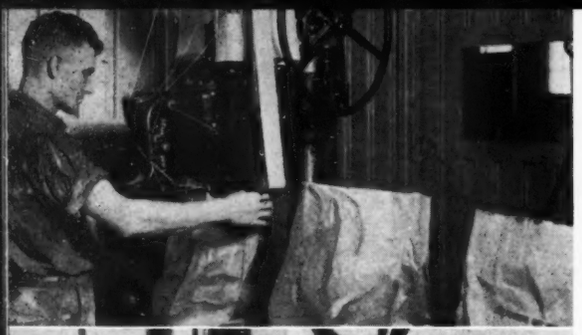
Plastic Age

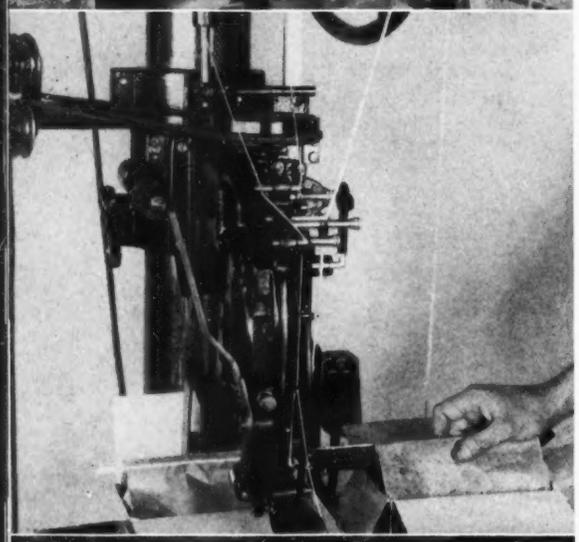
Dr. Ephraim Freedman, Macy standards bureau director, forecasts "plastic age in retailing" in talk "What Chemistry Is Doing in Development of New Merchandise" before National Dry Goods Assn. N. Y. City convention.

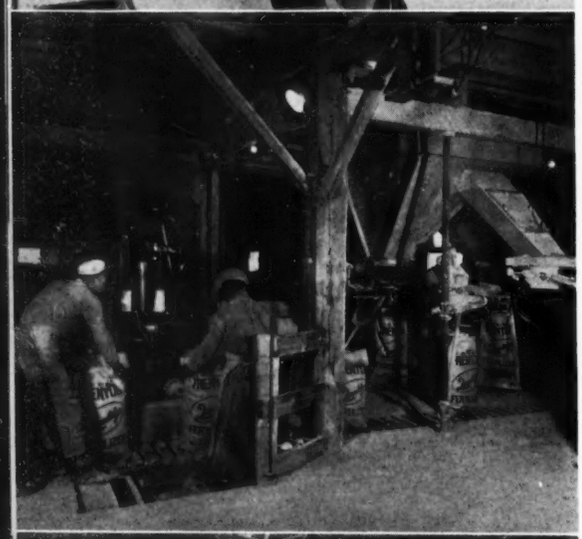
Wooing of consumer consciousness through informative labels outlining properties, performance, durability of plastics, he declared, could avoid pitfalls that snagged rayon industry during introductory years. Said Dr. Freedman: "Perhaps the plastic industry will lead the way in informative labeling and in consumer education."

Dr. Freedman concluded by tossing a bouquet in lap of industry: "The millions of dollars expended in fundamental and practical chemical research may well be considered by retailers as 'a gift from the gods.'"

Annual party of the American Flange & Mfg. Co., in the Park Central Hotel, N. Y. City, on Jan. 5. Attendance topped all previous records.







Figures one to four from top to bottom. Photographs courtesy of the Union Special Machine Company, Chicago, Illinois.

Bag Closers Aid Trend To Use of Bags for Packaging

THERE is a definite trend in the chemical field toward the use of bags of many different types and sizes for packaging a wide variety of products—granules, crystals, powders, etc. And one firm, at least, is packaging resin in bags while in the hot, liquid state. This increasing use of bags is attributable to several factors. There is a need for standard, inexpensive, light weight containers not only for what might be termed standard chemicals produced regularly in large volume, but for the many new products which are being placed on the market constantly and which immediately present individual packaging problems. These latter problems often can be solved quickly and easily with the proper type of bag, a solution made possible through constant developments which are being carried out by bag manufacturers and bag closing machine manufacturers.

Available today are jute, cotton and multi-wall paper bags in all practical sizes and weights of material to meet virtually any needs. Standard packaging equipment, including weighers, filling machines, conveying equipment and filled bag closing machines, is available to meet any packaging requirement—heavy duty, high speed equipment for large scale production, and lighter weight, inexpensive equipment for more modest needs, so that the user's investment is commensurate with his production. Much of this machinery is flexible enough to accommodate considerable change in plant conditions.

Filled Bag Closing Machines

Machines for producing sewed closures on filled bags offer a number of advantages. They will handle bags of any material in a wide range of sizes: they produce a neat, strong closure at a high rate of production and at a very low cost. For paper bags, machines are built to produce a regular sewed closure or a tape-bound sewed closure in which a paper tape is folded over the top of the bag and sewed in place to prevent contents from sifting through the top. Stitching is generally run through a filter cord of soft cotton yarn which seals needle punctures in the bag.

Filled bag closing machines consist generally of a sewing head with a column and base suitable to a given type of work, although one of the least expensive and most flexible units now offered consists of a sewing head suspended from an overhead pulley; one which may also be suspended from overhead rails, mounted on a wall or column, or handled in many other ingenious ways.

Some machines have power-driven conveyors, others have sliding sewing heads; swinging heads; swinging bag shelfs; stationary platforms; some are built for use while bags are being weighed on platform scales. These units are usually powered by built-in electric motor but can be used with line shaft power. Control of sewing head and conveyors is commonly by foot levers, leaving operator's hands free to guide bag through head. Where abrasive or excessively dusty materials are handled, sewing heads of the enclosed type are used to protect mechanism.

How Plants in Process Industries Close Bags

The following examples and accompanying illustrations are typical of bag closing methods in use in hundreds of process plants.

Fig. 1—The Argo, Illinois plant of The Corn Products Refining Co., closes 100 lb. multi-wall paper bags of refined dextrose sugar with a heavy duty machine which produces a sewed and tape-bound closure, as described above. This is a high capacity unit with a power-driven conveyor and is suitable for use where production is large and quite constant.

Fig. 2—The Rutland Fire Clay Co., Rutland, Vt., carries out an interesting packaging operation in which they put patching plaster in cartons lined with paper bags. The bags are then closed on a filled bag closer as described above. The machine has a potential production capacity equal to possible future demands, is faster than the former method used and provides lower cost production.

Fig. 3—The Trenton Bone Fertilizer Co., Trenton, N. J., closes an average of 800 multi-wall paper bags of fertilizer, weighing 100 lbs, every hour with a filled bag closing machine and a power driven slat-type conveyor which carries bags from under hoppers where they are filled, through the bag closer and off to a point where they are carried away by hand truck.

Fig. 4—Smith Kelly Co., Savannah, Ga., forwarding agents for Chilean Ni-

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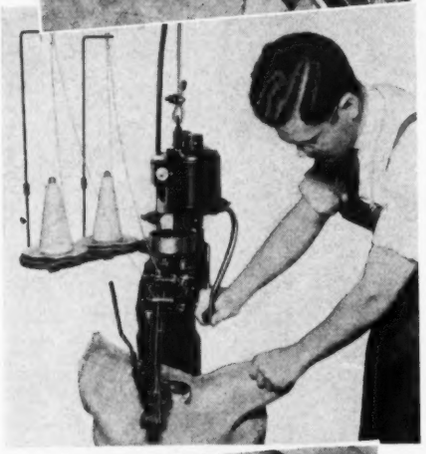

Figures five to seven from top to bottom. Photographs courtesy of the Union Special Machine Company, Chicago, Illinois.

trate, have a set-up similar to that at Trenton for closing burlag bags containing 200 lbs. of nitrate.

Fig. 5—In England, at Imperial Chemical Industries, Ltd., Billingham, Stockton-On-Tees, a continuous flow of jute bags pass on a belt conveyor through a stationary sewing head, the entire system controlled by one operator.

Fig. 6—The suspended head type of machine as shown is extremely flexible and is designed for use where production is limited or intermittent or where space is limited. It is ideal for all work of many small plants and can be employed as a standby unit in large plants for peak productions, odd lots and general utility service. These machines consist of a sewing head with an electric motor drive and cone clutch controlled by a hand lever. They are available with a tandem pulley and counterweight, or with a balancer unit which takes up or lets out cable as the unit is raised or lowered.

Smith Agricultural Chemical Company, in one of their plants, has mounted this sewing head on a wall bracket and built a sliding platform under it which is pulled back by a spring after each bag is closed and removed.

Griffith Laboratories, Chicago, suspend their counterweight within a tube on the wall, keeping it out of the way. Other installations are made with overhead single rails, etc.

Fig. 7—Diamond Crystal Salt Company employs heavy duty filled bag closing machines for closing cotton bags containing 100 lbs. of salt. The entire unit, conveyor and bag closer, is mounted on huge casters for portability.

Specifications, costs and other details concerning filled bag closing machines are made quickly available by manufacturers of this type of equipment, who, working in cooperation with the bag manufacturers, are in excellent position to make specific recommendations.

A Shippers Chart

Laucks Laboratories, Seattle, Wash., and Vancouver, B. C., has issued a valuable "Shippers Chart," which gives, at a glance, the physical and chemical properties of the various oils used in the paint, varnish and lacquer industry. The chart has been "authorized by the American Bureau of Shipping" for testing for dangerous and toxic gases.

New Film on Gasoline

The latest technical advances in the manufacture of gasoline and lubricating oils are illustrated in 3 motion picture films revised and reissued this winter by the U. S. Bureau of Mines. Supplementing the use of photography in showing oil-field, pipe-line and refinery operations, animated drawings are used to make plain the chemical and physical processes employed in oil refining and the various steps necessary in the thorough lubrication of an automobile. Revision of the films was made possible by the financial assistance of the company originally cooperating in their making. Copies of these films, which are silent, are available in the 16 mm. size for exhibition by schools, churches, colleges, civic and business organizations, and others interested. Applications should be addressed to the Bureau of Mines Experiment Station, 4800 Forbes st., Pittsburgh, Pa. No charge is made for the use of the films, but the exhibitor is expected to pay the transportation charges.

L & N Catalog

A 66-page condensed catalog, just issued, lists the entire Leeds & Northrup line of instruments for research and for routine testing in laboratory, plant and field. Every standard L & N item is briefly described, and most of the principal ones are illustrated. For more complete descriptions and much supplementary information, the reader is referred to more detailed L & N publications. However, in choosing instruments and accessories for specific work in laboratory, plant or field, many instrument users will find in this catalog a useful guide. A copy will be sent to anyone who asks Leeds & Northrup Co., 4934 Stenton ave., Philadelphia, Pa., for Catalog E—"Electrical Measuring Instruments For Research, Teaching, And Testing."

Booklet On Ceramics

U. S. Stoneware Co., Akron, O., has published an 8-page, illustrated folder describing the many sizes and shapes of industrial ceramic ware available. Among the items presented are included cylindrical tapered pots and jars, pitchers, trays, etc. Company offers these shapes in several different qualities of material, each having a thermal and mechanical shock resistance best suited for a particular service in the process industries.

The Lixate Process

This is the title of a very well illustrated and instructive leaflet of 26 pages published and copyrighted by the International Salt Co., Inc. The Lixate Process was developed by the International Salt Research Laboratory and is an automatic method of producing pure, clear, filtered, saturated brine from rock salt at substantial savings. The advantages as listed by the company are as follows: Lower cost per gallon, rapid and automatic production, simplicity of design and ease of operation, automatic control, clean and simple ejection of insolubles, elimination of bridging, caking, channeling, etc., no attention required, and complete flexibility and adaptability.

NEW CHEMICALS FOR INDUSTRY

Less glare and lighter colors feature this blackboard made of Pittsburgh Plate Glass Company's Nucite which contributes toward protection of school children's eyesight. Standard colors are ivory, green and black, offering more leeway for decoration and lighting schemes. Dark chalk is used on the ivory board, white on green and black products.

Digest of Chemical Developments in Converting and Processing Fields

CHEMICAL INDUSTRIES

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Outstanding phenomenon of the depression decade was the amazing invasion of the coatings field by new synthetic resins.

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National produces Maleic (Toxilic) Anhydride directly by controlled catalytic oxidation of benzol as a primary product, rather than as a by-product. This is your assurance of an unfailing source of supply which is never dependent upon the production of other chemicals. We invite your inquiry for samples, quotations and technical information.

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BRANCHES AND DISTRIBUTORS THROUGHOUT THE WORLD

Recent Developments in RED LEAD

By H. D. Ward*

Micro-Lead Products (Ericsson) Ltd.

WELL merited attention has been given by research and test institutions, to the problem of protecting iron and steel structures from damage by corrosion or rust. As far as painting practice is concerned, conclusions are unanimous in one respect. To obtain the most efficient protection, the surface of the metal must be first coated with a primer, the main purpose of which is to inhibit rust formation. This is followed by subsequent coats of paints which possess the necessary resistance to weathering, moisture, corrosive atmosphere or sea water.

Red lead paints have been in use for centuries. Recent research work has confirmed and explained the excellent results which have been obtained. Therefore, those responsible for protection of costly and important engineering structures almost invariably specify red lead paint as the first coat to be applied.

One striking fact should be kept in mind when the properties of red lead in paint are being considered. Although tests have been conducted on the material as manufactured by many different processes, one common virtue is apparent. This is the property of rendering the iron surface passive, so that formation of rust below the painted surface is retarded or prevented.

From the point of view of the paint manufacturer, red lead produced by the earlier processes was far from satisfactory; the two main disadvantages experienced were:—

(1) The presence of comparatively large particles which resulted in rapid settling rate when in paint form. This necessitated frequent stirring during use, and resulted in difficulties with storage and application.

(2) The low chemical purity of the red leads which contained varying proportions of lead monoxide, litharge. Litharge reacts with linseed oil to form what are generally termed "lead soaps." This causes rapid hardening or setting of the paint. Pure red lead, Pb_3O_4 reacts very slowly, if at all, in linseed oil. A litharge content of about 5½ per cent. is regarded as being the intermediate between the non-setting and less stable varieties.

Developments in manufacturing processes have therefore been directed mainly towards the reduction in size of the particles. The achievement of this also facilitates the production of red leads which are practically free from litharge, because fine particles can be oxidized more completely. Coarse particles, on the other hand, become fully oxidized on the surface only, the interior containing litharge. For example, a pigment having particle size of from 2–5 m.u. may be expected to contain a minimum of about 2 per cent. litharge whereas one having particle size 5–12 m.u. will probably contain at least 7 per cent. litharge.

A number of grades of red lead are now in general use and the type is dependent on the fineness and the proportions of litharge, PbO and red lead Pb_3O_4. These are shown in the following table.

	Description	Red Lead Pb_3O_4 Contents	Stability in paint form
1	Setting type (BS.217 'A')	43% to 72%	Unstable. Used mainly for jointing purposes.
2	Ordinary type (BS.217 'A')	72% minimum	Poor stability. Must be used within a day or so.
3	Non-Setting (BS.217 'C')	93.15% minimum	Good stability.
4	Highly Dispersed type	98% approx.	Excellent stability.

"Orange mineral" red lead can be regarded as an intermediate grade, between the non-setting and dispersed types.

Paint manufacturers recognize the need for improvement in the technical properties of red lead when in paint form. For example, the 15th report of the Committee of the Institution of Civil Engineers refers to replies to their questionnaire, which indicate the advisability of using the freshly ground paints. Reductions of settling rate, and reactivity are therefore necessary to overcome the difficulties experienced in practice. Freedom from coarse particles results in the desired ease of remixing, with good results on application, after extended periods of storage.

Highly dispersed red lead is not an untried product by any means. The material is used in large quantities, particularly on the Continent and has been standardized upon by many important civil and marine engineering concerns after exacting trials under practical conditions.

Red lead primers are used where conditions are most severe. Irregular surfaces and sharp angles are the rule rather than the exception, in practice. The paints used are rarely freshly mixed. Under these conditions the highly dispersed product gives advantages which are more marked than with laboratory tests, using the accepted types of test panels.

A very interesting subject for discussion arises from two criticisms which have been put forward against H.D. red lead primers. These are:—(a) That the films tend to be too thick; (b) That the films tend to be too thin. Coupled together, these suggestions appear to be paradoxical and need explanation.

In the first case, the user prepared a paint, based on the same formulation as with ordinary red lead. No adjustment was made to the viscosity and when applied, it was found that more paint was needed to coat a given area. The thicker H.D. primer could not be brushed out so readily and this resulted in increased film thickness. When the reason was appreciated, a small addition of thinners gave the desired effect.

While there is a good deal to be said for ready mixed paints, adjusted accurately by the maker, it would also appear to be desirable that a certain margin in thickness is left for the discretion of the user. Obviously a paint of fairly low viscosity might be satisfactory on flat surfaces but unsuitable for say angle iron possessing sharp corners.

The skill of the experienced painter, in carrying out final adjustments is a factor that should not be discounted, particularly if weights applied are checked, on important work.

The suggestion that H.D. red lead primers yield thin films in practice is deduced from the comparatively high hiding power of the pigment. It must be admitted that less weight of the finer pigment is necessary, to fully obscure a given area. On the other hand, ordinary red leads are badly lacking in covering power. One gallon of ready mixed red lead paint may contain 30 pounds of pigment or more and yet present difficulty in obscuring a surface uniformly, with one brushed coat, particularly if the material is not freshly mixed.

* Lecture delivered before the East Ham Oil & Colour Students Association, London, England.

Study of this question brings forward the following points:—

(1) Film thickness is dependent on viscosity apart from hiding power. For example, the importance of film thickness with clear varnishes is appreciated widely. Given suitable consistency no difficulty is experienced in obtaining films in the order of 30 m.u., a figure which may be increased or decreased as desired, within reasonable limits.

(2) Tinted red leads have been recommended for many purposes, being combined with pigments such as carbon black, iron oxide, etc. These have greatly increased hiding power and consequently may be applied in very thin films. The danger in this direction would appear to be considerably greater than any which might result from improvements in hiding power of the red lead themselves.

(3) Corrosion inhibition depends on uniformity and completeness of contact between the metal surface and the pigment. Increase in surface area for a given weight of pigment is therefore an advantage.

The center of a coarse particle is comparatively remote from the surface of contact and can have little or no influence on electro-potential or oxidizing effects. Moreover, the larger particles may sink or fall after application on iron and in their tracks, leave metal unprotected by pigment, especially where there are sharp edges.

It is clear that film thickness of H.D. red lead primers may be regulated in the same manner, as with other types of red lead—a point which has been proved by many practical trials. At the same time it should be remembered that the function of the pigment is to inhibit rust formation, even when moisture is present in the film itself. Subsequent coats of other types of paint fulfill other requirements. Therefore, in the case of red lead, pigment concentration and contact area are more important than excluding effect, which results from high film thickness.

A red lead primer will normally cover about 3000 square feet per gallon, that is equivalent to about 16 m.u. thickness. When tinted green, the red lead paint will cover up to 10,000 square feet per gallon with a corresponding decrease in film thickness.

To produce ordinary red lead, the metal is heated in a reverbatory furnace where it is converted into the monoxide, PbO. This is then subjected to further heating in the presence of oxygen when the red lead is formed. This process has been modified in many ways, in order to increase purity and uniformity.

Highly dispersed red lead is a comparatively new product. A very interesting direct process for manufacturing this material has been introduced recently in England.

Metallic lead is first converted into the form of vapor from which red lead is produced by contact with oxygen, under controlled conditions. The ingot lead is introduced into an electric furnace where the metal becomes molten. From here it is fed through a heated tube into a vaporizing furnace. This is a 3 phase arc type, capable of reaching temperatures of about 3000° C.

As soon as the stream of metal falls on the incandescent hearth of the furnace, it vaporizes rapidly. An effect is given similar to that which results when water is dropped on to heated iron. The globules of boiling lead move violently, being carried, as it were, on the cushion of the vapor which is being generated. The rate at which the molten metal is fed into the furnace is controlled accurately, and is somewhat less than the maximum vaporizing capacity of the furnace. This ensures an excess of heat so that the gaseous lead is superheated in a manner similar to that applied to steam.

Preparation of Oxygen

The oxygen is prepared in adjoining equipment. Air is drawn from the atmosphere and is compressed and liquified. Oxygen is separated from the liquid air by a fractionating process. It is fed into the main chamber. A specially constructed fan recirculates the oxygen which passes through ducts leading to the vaporizing furnace. Thus, a mixture of lead and oxygen vapors pass up a vertical duct to form red lead as they cool and condense to solid form.

The extremely fine particles settle in the precipitating chamber where the temperature is controlled by external heating, to ensure complete oxidization.

The vaporizing furnace, fitted with ducts, is the most important part of the plant and the construction involves considerable experience in design and selection of materials. Accurate control of temperatures, pressures and feeding rates is essential in order to ensure uniformity and safety in operation. An elaborate system is employed to maintain constant conditions automatically and to record and indicate them in addition.

While the process is intended primarily for the production of pure highly dispersed red lead, adjustments to the temperatures and oxygen supply can be effected so that finely divided litharge is produced. If an inert gas, such as nitrogen, is substituted for the oxygen, metallic lead powder results.

Red leads show considerable variation in shade, depending on the method of manufacture, the purity, and the fineness of particle size. The finer grades are more orange in cast than others as a rule, but no definite conclusions may be drawn from this.

In contrast to most other pigments, no special importance is attached to the color, because red leads are used chiefly as priming coats. It cannot be said that the appearance is attractive, by any means, and some users prefer to tone the paints with other pigments such as carbon black or iron oxide. In such cases, care must be taken to ensure that the rust inhibiting properties of the paints are not reduced.

Typical Tintometer analyses of various red leads are as follows:—

	Orange	Red	Yellow	Brightness
Highly Dispersed ..	13.3	–	.7	+1.4
B.S. 217 Non-Setting	14.0	.3	–	+1.4
B.S. 217 Ordinary	9	5.1	–	+1.2

The finely divided product has a definite orange shade, the coarser ordinary type being inclined more towards red. It might be expected that the presence of litharge which is yellow would tend to render the pigment more orange but this is not the case. The ordinary red lead shown above contained nearly 21 per cent. litharge whereas the other types had less than one quarter of this amount. The monoxide is present mainly in the center of the coarse particles, and not on the surface; which probably explains this point.

The most important chemical test to the paint manufacturer is that carried out to determine the percentages of true red lead, and litharge. Unfortunately there are no means of estimating these directly, but a simple and reliable method is used in which the quantity of lead peroxide PbO_2 is determined. The procedure is detailed in B.S. Specification No. 217 and a chemically pure red lead should contain 34.89% of the peroxide. To calculate the percentage of red lead Pb_3O_4, the peroxide figure is multiplied by 2.866.

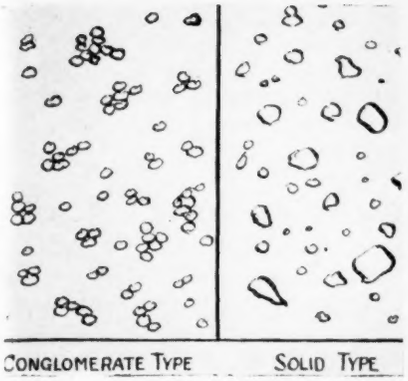
Typical analyses of the three types of red lead are as follows:—

B.S. 217 'A': 28.8% PbO_2 equivalent to 82.5% Pb_3O_4.
B.S. 217 Non-Setting: 32.84% PbO_2 equivalent to 94.13% Pb_3O_4.
Highly Dispersed: 33.8% PbO_2 equivalent to 96.87% Pb_3O_4.

As regards other impurities, these depend chiefly on the quality of the metallic lead used as the basis for the pigment, and also upon the possibility of contamination during manufacture. Pig lead may be obtained in a very pure state. A recent analysis of the Empire produced material used in the direct process showing the remarkable figure of 99.99236% lead, that is, total impurities less than .008%.

The electrical vaporization process described, which combines the lead and oxygen directly, results in great uniformity without risk of contamination.

The examination of pigments by microscope is an invaluable aid to the paint technologist who is interested not only in the size and appearance of the particles in the dry pigment, but more deeply so in their behavior when in the form of paint. Red lead is one of the most dense pigments and the size of the particles has profound effects on the properties of the



Figs. 1 and 2. Diagrammatic Form H. D. and ordinary red lead.

paints. Sieving tests will detect coarse material. On the other hand, the apparently coarse pigment may be solid or may consist of groups of fine particles which form conglomerates. The latter, if they are in a suitable physical condition, will become detached or dispersed when ground into paint so that the true individual size is revealed.

The comparison between the solid and conglomerate types may be more clearly seen from diagrammatic figures 1 and 2. The more important question now arises as to how the pigments behave when ground with a normal vehicle such as raw linseed oil to form a paint. Do the larger particles become broken up? Do the individual particles become detached so that they are well dispersed in the liquid?

Figure 3 is non-setting red lead to B.S. Specification 217. The larger particles have not been reduced by the treatment received, although a large proportion can be seen which are 1.5 m.u. diameter.

Figure 4. In the case of the highly dispersed red lead, the absence of coarse particles or conglomerates is clearly apparent. The average size is about 1.5 m.u. and the pigment dispersion is uniform and complete for all practical purposes.

Naturally, the paint manufacturer does not wish to carry out extended or expensive grinding operations. In the case of the highly dispersed red lead, good dispersion in the raw linseed oil is accomplished in a normal manner.

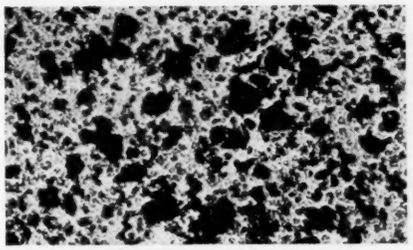


Fig. 3. Non-setting red lead paint x 700 after prolonged grinding.

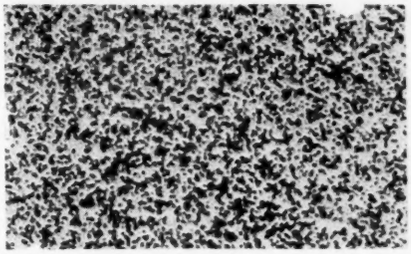


Fig. 4. H. D. Red lead paint, x 720 after prolonged grinding.

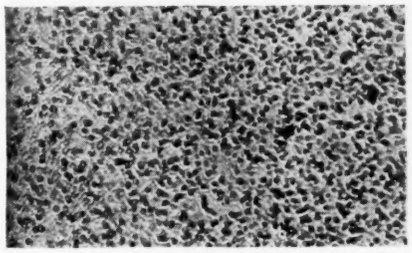


Fig. 5. Zinc oxide, triple roll mill ground, x 720.

At this point, a further question may be asked. Is the highly dispersed red lead specially fine in particle size as compared with other pigments in general use? As a matter of fact the product is no finer in paint form than, say, pigments such as zinc oxide, antimony oxide or a good quality white lead, which are never referred to as "highly dispersed pigments." It could therefore be said that from a comparative viewpoint, that a red lead having a particle size of 1.5–2 m.u. is normal as far as present day general standards are concerned. Figure 5 is zinc oxide paste magnified 720 diameters. This is very similar in particle size to the red lead manufactured by the direct process, seen in Figure 4.

The oil and color student could not have a more striking example to demonstrate the profound effects of particle size in relation to the technical properties of paints than those which may be observed with the different types of red lead.

The more finely divided pigment which disperses readily in its vehicle shows marked difference in behavior in a number of respects. These will be considered from a technical and practical point of view.

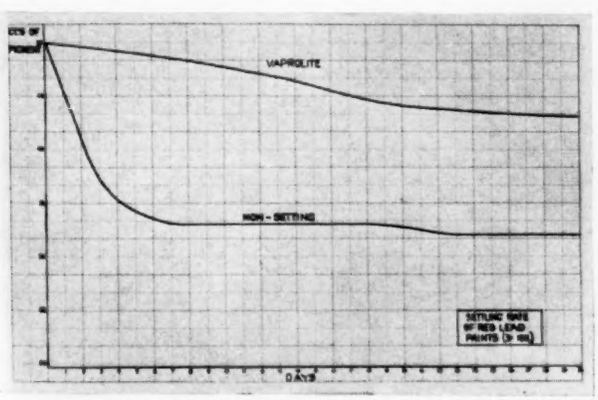
Settling rate. Figure 6 illustrates a comparative test conducted on paints made with highly dispersed red lead and non-setting type to B.S. Specification 217, over a period of 30 days. The paints consisted of 3 parts of pigment to one part of raw linseed oil by weight and were ground under similar conditions by a triple roll mill. Fifty c.c. of each paint were introduced into measuring cylinders and the volumes to which the pigment level settled were observed daily and recorded graphically as seen.

After seven days, the non-setting variety showed considerable separation, the pigment level having descended to the 33 c.c. mark. The highly dispersed product, on the other hand, settled to a considerably less extent, the column showing only 2 c.c.s. of clear oil on the surface, that is, pigment level at 48 c.c.s.

After a period of one month, levels were practically stable, being:—H.D. Red Lead—6½ c.c.s. Clear Oil—43½ c.c.s. pigments; Non-Setting Red Lead—18 c.c.s. Clear Oil—32 c.c.s. pigments.

Figure 7 is a photograph of the actual test described, at the end of the 30 days period. It is interesting that the final apparent bulk occupied by the dispersed pigment is 1.4 times higher than that of the non setting red lead.

Below, Fig. 6. Chart showing settling rates, H. D. and ordinary red leads.



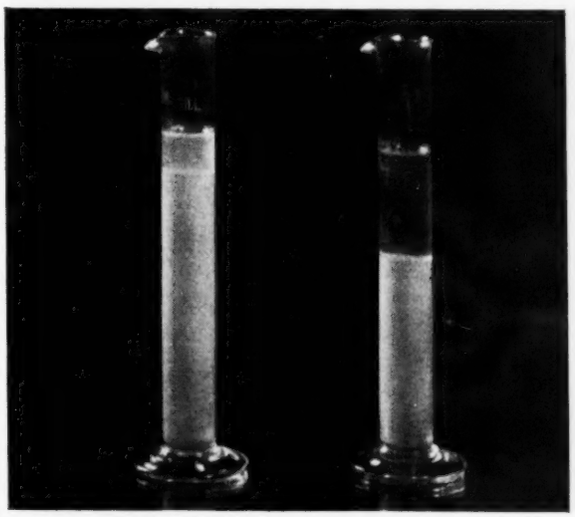


Fig. 7. Conclusion of settling tests 3:1 paints.

Chemicals

A116. Alloy Metals Review; Dec., '39. Contains following articles; High-Pressure Spindle Forging and Steam Turbine Unit, Welded Carbon-Molybdenum Steel Plate for Oil Refinery Reaction Chambers, Applications of Vanadium, New High Speed Steels, New Type of Stainless Steel Clad Carbon-Molybdenum Plate Developed. High Speed Steel Alloys, Ltd.

A117. Baker's price list for industrial chemicals, Jan. 15. J. T. Baker Chemical Co.

A118. By Gum, Dec.-Jan. Monthly bulletin gives us Reichhold's Anniversary Resolutions and articles on: correction of patent abuses, fibres, fabrics and finishes, and dyes, dry colors and their application.

A119. Caled Cleanser; a twenty-four page booklet combining philosophical musing with information about Caled products. Caled Products Co., Inc.

A120. Ciba Review, No. 28, presents a well-written and illustrated history of the spinning wheel including Leonardo da Vinci's ideas on the mechanization of spinning.

A121. Emery Facts; a handsome booklet comprised essentially of five divisions, namely oleic acids, stearic acids, fatty acids, twitchell oils and bases, and saponifiers. In each division the Emery product is described as to properties and uses. For example, the uses of oleic acid in various materials such as soap, metallic oleates, printing inks, polishes, disinfectants, lubricating oils, rubber, etc., and the uses of stearic acid in waterproofing cements, candles, cosmetics, shaving creams, oil soluble dyestuffs, organic chemical derivatives, paints and many other materials are described. Emery Industries, Inc.

A122. Enthone Pickleen; describes the properties and uses of Pickleen, a new product for use in acid pickling. Also lists prices. Enthone Chemical Co.

A123. Heyden Chemical Co.; Wholesale price list, Jan. 1940.

A124. Lead; Jan. booklet devoted mainly to illustration of uses of white lead paint. Lead Industries Association.

A125. Mallinckrodt Chemicals; a complete price list of chemicals for medicinal, photographic, analytical and industrial uses.

A126. Neoprene Notebook, No. 17; describes the use of mixing and calendering in the manufacture of industrial products from rubber and neoprene. Describes also a quick-acting faucet for coffee and the use of neoprene for laboratory equipment. Du Pont de Nemours & Co.

A127. Orthmann Laboratories have prepared a booklet defining their service to the following industries: leather, lubricants and fuels, food sanitation and sewage, paper. They also explain their general consultation service. Orthmann Laboratories, Inc.

A128. Priorities; Jan. '40, a booklet comprised of a short article entitled "What's Ahead" and a short story on some history and uses of mercury. Prior Chemical Corporation.

A129. Progressive Perfumery and Cosmetics; August-December, 1939. Presents the following articles:—The American Chemical Industry and the Present War, Coal-Tar and Natural Dyes, Musk—Part 1: The Natural Product. Van Dyk & Co.

A130. Protovac; Recognizing the needs of industries for new and different materials and products designed for particular problems and processes, the Research and Development Laboratories of the Casein Co. have developed a line of modified casein products. Booklet on these products takes up method of manufacture, general properties, suggested uses and grades of Protovac products. Some of the suggested uses are: adhesives and glues, sizing and coating for paper, finishing and dressing of leather, printing inks, paints, insecticides and fungicides, stabilizer and thickener for rubber and latex, cosmetics, medicinal and pharmaceutical. Casein Company of America.

A131. Sharples Synthetic Organic Chemicals; 62 page booklet containing very complete information, such as specifications, properties, and uses. The specifications and properties of each product are listed, and supply the following information at a glance: color, specific gravity, acidity, water content, volatility, weight per gallon, flash point, surface tension, heat of vaporization, specific heat, and solubility. Sharples Solvents Corporation.

BOOKLETS AND CATALOGS

A132. Witcombings; Dec. '39, Bulletin announces opening of new research laboratories and supplies new ideas in production and maintenance. Some of these are an anti-corrosive paint, a vacuum pressure pump, a flow meter, a self-emulsifying oil, a non-fogging thermometer, and a non-sparking fan. Wishnick-Tumpeer, Inc.

Equipment-Containers

E178. A four page bulletin, No. 301-B-2; describes construction and gives specifications of sensitive back pressure valves for air, gas or liquids. Connelly Iron Sponge and Governor Co.

E179. A new 24-page booklet which contains useful information on Jessop Silver-Ply stainless-clad steel for both buyers and fabricators of stainless equipment, has been issued by the Jessop Steel Co.

E180. A revised, eight-page illustrated bulletin on expansion joints, giving specifications and prices. American District Steam Co.

E181. Enthone Filter Press Paper; a leaflet of information about high strength filter paper. Enthone Chemical Co.

E182. General Electric Bulletin GEA-3179A; Operation and construction of new G. E. Phano-Charger, essentially a full wave rectifier to which is added a voltage-regulating relay, is carefully explained. General Electric & Mfg. Co.

E183. Goodrich V-Belt Drive Design; In its new 24-page catalog section on fractional-horsepower V-belt design the Goodrich Co. has performed a useful service to the purchaser without engineering training by explaining, in simple steps, how a V-belt should be selected.

E184. Permutit Master Pilot Valve; a two-page illustrated leaflet which describes the Permutit Master Pilot Valve. The Permutit Co.

E185. The Paper Service Co., Cincinnati, Ohio, has issued a brochure supplying general information on bulk packaging problems and materials.

E186. The Rex World, Vol. 5, No. 3; A well illustrated circular showing many uses of chain belts. Chain Belt Co.

E187. Selected Editorials from Link-Belt News; a 64-page booklet of editorials of broad general interest written by prominent authors.

E188. Showerway, a booklet describing and illustrating sanitary hand-washing equipment for public or industrial uses. Lyon Metal Products, Inc.

New Products

Dairy Cleanser

Product is described as a straight alkaline cleaner that can in no way injure surfaces of tin, tin-plate, aluminum, or any other metal. It has proved popular with dairymen in the northwest and midwest states.

"Pickleen"

New England concern has developed this compound as an addition agent for pickling baths. It is said to effect marked lowering of the surface tension of sulfuric or muriatic acid pickling solutions, which results in saving of acid by drag-out. Also, "Pickleen" results in a saving of acid by an inhibiting action, but is not an inhibtor itself, according to the manufacturer.

Latex Preservative "Santobrite"

A pentachlorophenol salt, "Santobrite" is claimed to be an effective and economical rubber latex preservative, insuring the liquid latex's stability during transportation and storage. It is used in concentrations of considerably less than one per cent., in conjunction with a much smaller proportion of ammonia than is ordinarily required when ammonia alone is used as the stabilizer. The pentachlorophenol compound is a non-volatile solid, prepared in both powder and briquette form.

New Resin Products

A new line of resins suitable for the rubber industry will shortly be offered under the trade names "Piccoumaron" and "Piccolyte." The former is a series of coumarone resins which have been offered for a number of years to other industries and which are now being made available for use in rubber to take care of the demand for dark colored resins.

The new "Piccolyte" resins are basically a type of pure hydrocarbon thermoplastic polymers. They have the inertness and other chemical properties of the coumarones but have a minimum of yellowing tendency. They are said to be even paler than W. W. Rosin and should make the production of light-colored rubber stocks easy. However, this resin may be obtained in a complete color range from light to extra dark, and in liquid forms, with melting points from 10° to over 120°C.

New Detergent

A new synthetic organic chemical characterized by marked detergent and wetting properties has been announced.

It is a water-soluble, viscous oily liquid, produced in several modifications or grades of almost neutral reaction. Chemically it is a condensation product of protein derivatives and fatty acids which are united into a definite stable compound containing no free fatty acids or soap. It has a large molecular size and a close chemical relationship to some of the materials treated with it. Among the properties or uses claimed for it are: Wetting and penetrating; detergent, scouring and foaming, emulsification of oils, greases and waxes; solution and removal of lime soaps and deposits; foaming in the presence of lime; stability to heat and to chemicals; sparing effect on cellular bodies such as human skin and hair, wool, rayon, cotton fiber and other plant tissues

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CHEMICAL SPECIALTIES

Novelty plus utility describes latest innovation in packaging. Semi-circular bubble of Du Pont's "Plastacele," cellulose acetate plastic, aside from decoration and eye-stopping novelty, permits prospective purchaser to see contents. Bubble is shaped from flat sheet of plastic. Fabricated by Cellulose Products Co.

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CHEMICAL INDUSTRIES

Du Pont's "Pyralux," recently developed especially for touching up, refinishing automobiles.

Automotive Chemical Specialties

By Charles L. Glickman

Chemical Consultant

A WIDE variety of chemical specialties are now being manufactured for use on automobiles. While there have been scattered discussions appearing from time to time in the literature referring to certain specific branches and examples of this general class of products, there has yet to be presented any all-embracing discussion of the entire class as a whole. It is not the purpose of the writer to discuss the relative merits of competitive brands or products or their respective methods of preparation. What will be presented is a comprehensive review of the various classes of products, certain specific examples of each class and methods of preparing each of these individual products. Any wide review will entail coverage of the following general classes:—

1—Abrasive polishes (liquid and paste).
2—Non-abrasive polishes (liquid and paste).
3—Anti-freeze preparations.
4—Brake fluids.
5—Automobile soaps.
6—Miscellaneous preparations.

Abrasive polishes in liquid form have as their general components, a solvent or mixture of solvents, an oil or oily compound for gloss purposes together with enough water and emulsifying or dispersing agent to form an emulsion. Certain products have also incorporated within them either a small amount of wax or else have replaced all of the polish oil by wax. The abrasives employed are generally very mild ones to which has been added a small amount of bentonite to aid in emulsification and to prevent excessive settling or caking of the pigment in the can. While certain soaps such as the triethanolamine salts of the fatty acids have been successfully used as a partial cleaner and emulsifying agent, the trend has been towards the use of sulfonated oils for this specific purpose. It has been definitely established that the latter are superior to the former both as a cleaner and as an emulsifier for automotive polish purposes. Soaps tend to smear and cannot be buffed to the dry and streak-proof finish that is so desirable in products of this type. The additional factor that the latter are free of alkali makes their use more desirable. The solvents used may be either a low boiling hydrocarbon solvent such as naphtha, or else small amounts of alcohol or acetone.

Paste Type of Polish

The paste type of abrasive polish is generally composed of a suitable blend of waxes and abrasives bound together by a solvent or mixture of solvents with suitable amounts of water and an emulsifying agent. As in the case of the liquid type, bentonite is invariably present. In any general comparison of the preceding liquid type of polish and the paste type of product, it should be mentioned that the former is generally used as a one-step cleaning and polishing product. In contradistinction, the paste product is generally used as a pre-cleaner for a following wax application.

While a wide variety of raw materials can be used in the preparation of either of the two preceding products, the following ones are the components usually encountered:

Solvents—Alcohol, acetone, naphtha, kerosene, hexalin.
Polish oils—Light technical mineral, spindle, castor, sulfonated oils.
Abrasives—Fine tripoli, air floated silica, "snowflakes."
Emulsifying Agents—Gums, soaps, bentonite, sulfonated oils.
Waxes—Carnauba, paraffin, ceresine, synthetics.

Anti-freeze preparations have long been the subject of intensive experimentation and testing. The present trend in the market apart from preparations based upon or else containing extensive amounts of polyhydric alcohols is towards anhydrous alcohols of the primary type. Additional factors and components such as anti-rust compounds or inhibitors have been included in the better grade products. What effect present market conditions with increased demands for glycols and glycerine will have on the anti-freeze market will be shortly seen.

Hydraulic brake and shock absorber fluids have been more or less standardized along the lines of alcohol mixtures; castor oil or glycerine being the additives for viscosity purposes. The main requirements of this item are that viscosity

vary as little as possible over wide ranges of temperature. Additional factors such as negative action on rubber or the transmission lines (usually copper) are of equal importance.

Body Cleaners

Automobile body cleaners (soaps) have undergone a far-reaching alteration. The old method of using green soap was replaced by kerosene water mixtures and of late by the use of specially prepared wetting agents which allow of rapid handling and a minimum amount of labor. We are going to give this latter product more than passing attention since it is a relatively new development and its action most interesting.

These new body cleaners are usually neutral soapless compounds of high foaming power and marked detergent efficiency. They clean rapidly and thoroughly and have no harmful effect on the lacquered surfaces to which they are applied. They can be easily rinsed off without the use of pressure sprays and *do not have to be wiped dry.* All that is merely required is to sponge the car off with the solution, rinse off the lather and dirt and allow the car to dry in a cool shady place. The surface is left clean, glossy and free from streaks. The obvious advantages derived from such a simple procedure are quite evident when large areas such as truck or trailer bodies are so treated. In all fairness, it should be also stated that this type of product cannot be used with any degree of satisfaction on such surfaces as motors or the underparts of chassis where the dense incrustation of dirt and grease makes thorough cleaning difficult even for alkaline or solvent solutions.

Miscellaneous Products

Under miscellaneous products, we encounter as wide and variable a line of items as are to be found in any industry that employs manufactured chemical products for treatment, maintenance or preservation. Radiator seals, both liquid and powder (capsule or loose), radiator cleaners, valve grinding compounds, oil compounds for spring and chassis spraying and lubrication, tire cleaners and color restorers, running board cements, grease detergents, dry pencil-type lubricants, carbon removers, top cylinder oils and metal polishes are some of these items.

Before entering the formulative part of our discussion, we wish to call attention to the fact that while the majority of these formulae stated are practical ones having been actually used and sold in the open market, they can nevertheless be used as a starting point for improvements to result in products of greater performance.

Abrasive Body Polishes

1. *Liquid Type.*

Ortho Dichlorbenzene	1½ gals.
Pine Oil	½ "
Kerosene or V.M.P. Naphtha	9½ "
Diatomaceous Silica (fine)	11 lbs.
Diatomaceous Silica (finest)	11½ "
Cream Tripoli	40 "
Bentonite	3½ "
Water	22½ gals.
Glycerine or Glycol	⅜ "

Procedure: Mix thoroughly the pine oil, kerosene, etc., and the chlorbenzene. Mix the abrasives and bentonite together with the glycerine and water to a smooth homogeneous paste. Add the oil mixture to the abrasive mixture slowly with vigorous agitation till fully incorporated. (A centrifugal pump can be used to advantage for this thorough mixing.)

2. *Liquid Type*

Alcohol	300 ounces
Emulsifier	900 "
Light Technical Mineral Oil	270 "
Naphtha	450 "
Acetone	100 "
Water	3100 "
Diatomaceous Silica (finest)	900 "

Procedure: Mix everything but the abrasive and water together and stir till uniform. Mix the abrasive and water together into a smooth paste, and add this to the oil and solvent mixture with vigorous stirring continued till emulsification is complete. *Note*: A partial separation is exhibited by this product which can be readily overcome by the use of a very small amount of gum karaya together with a suitable preservative and dissolved in the water prior to emulsification. Bentonite mixed with the pigment in small amount may also be used for the same purpose.

3. *Liquid Type*

Same formula as for the preceding No. 2 but with the addition thereof of 50 ounces additional, each, of the same grade of mineral oil and of acetone. Procedure for mixing remaining the same. This product is somewhat more stable and gives better performance.

4. *Liquid Type*

Spindle Oil	4⅞ gals.
Light Fuel Oil	2⅜ "
Diatomaceous Silica (fine)	45 lbs.
Diatomaceous Silica (finest)	45 "
Bentonite	2 "
Water	32 gals.

Procedure: The abrasives and bentonite are thoroughly mixed into the water. The oils are mixed together and added to the abrasive water mixture with vigorous stirring until emulsification is complete.

5. *Paste Type*

Carnauba Wax	27 lbs.
Spermaceti Wax	50½ "
Ozokerite Wax	44 "
Kerosene or V.M.P.	32 gals.
Diatomaceous Silica (finest)	65 lbs.
Cream Tripoli	131 "
Bentonite	16 "
Coloring Pigment or Dye	q.s.
Water	13¼ gals.
Borax	3¼ lbs.
T.S.P.	3¼ "
Soap Chips (finest grade)	16¼ "
Water	13¼ gals.

Procedure: The waxes are heated and mixed with the solvent to yield a clear solution which is kept hot till used. The abrasives, bentonite and pigment or water soluble dye are mixed together with 13¼ gallons of warm water and stirred till uniform and free from lumps. The alkalies and soap chips are dissolved in 13¼ gallons of boiling water and stirred till solution is complete. The abrasive and soap-alkali solutions are then thoroughly mixed and the hot wax solution is then added to it with sufficient rapid agitation to insure emulsification. The product is then packed warm into suitable containers.

Non-Abrasive Body Polishes

1. *Liquid Type*

Castor Oil (Pale technical)	8¾ gals.
Naphtha	2½ "
Alcohol (solox)	8 5/16 "
Water	66½ "
K_2CO_3 Solution	1½ "
Spermaceti Wax Solution	6 13/16 "
Light Technical Mineral Oil	35 5/16 "
Chip Soap (finest grade)	43¾ lbs.

Procedure: The potassium carbonate solution is prepared by making a saturated solution of the alkali in water and decanting the clear supernatant liquid. The spermaceti wax solution is prepared by dissolving 1½ lbs. of the wax in a gallon of naphtha and filtering.

The soap, alkali solution and water are mixed together, using heat if necessary. The alcohol and castor oil are mixed together. The spindle oil or mineral oil, naphtha and wax solutions are also mixed together and then all of the solutions combined cold with vigorous and continued agitation until they have been thoroughly emulsified. A colloid mill improves the stability and texture of the finished product tremendously.

2 *Liquid Type*

Emulsifier	55 gals.
Light Technical Mineral Oil	50 "
Naphtha	20 "
Water	100 "

Procedure: The emulsifier, mineral oil and solvent are mixed together with stirring until uniform. The water is then added to this product with continued stirring until emulsification is complete. A colloid mill can be used to advantage in the preparation of this product.

3. *Paste Type*

Carnauba Wax (Yellow)	5¾ lbs.
Ozokerite Wax	8½ "
Paraffin Wax (130° F.)	¾ "
Naphtha	2 gals.

Anti-Freeze Preparations

1.

Glycerine	62¼ gals.
Water	78¼ "
Dye Solution	q.s.

2.

Alcohol (C. D. 5)	109 gals.
Glycerine	3⅛ "
Water	50 "
Diacetone Alcohol	6¼ "

3. *Resin-Alcohol Solution*

Resin No. 3	10 lbs.
Alcohol (C. D. 5)	18 gals.
Water	18 "

Note: This product shows exceedingly interesting properties in the way that the resin depresses the freezing point. Corrosion tests on metal strips and coupled metal strips exhibited no activity either direct or electrolytic.

Hydraulic Brake Fluids

1. *Resin Alcohol Solution*

Alcohol (C. D. 5)	18 gals.
Water	18 "
Resin No. 3	20 lbs.

Note: The freezing point of this solution is approximately —30° C. The boiling point of this solution is approximately 160° C. The action of the

solution on copper or rubber after exposure under mild heat and pressure for a period of 48 hours was negative and non-apparent. The reaction of the finished preparation to both litmus and phenolphthalein is negative.

2. *Standard Type Brake Fluid*

Castor Oil (Technical)	10	gals.
Alcohol (C. D. 5)	10	"

3. *Standard Type Brake Fluid*

Glycerine	10	gals.
Alcohol (C. D. 5)	10	"

Procedure: All of the brake fluids and/or radiator anti-freeze preparations are prepared in the same manner—by simple mixing.

Automobile Cleaners (Garage Service)

1. *Solvent Soap Type*

Kerosene	90	parts by wgt.
Ammonium Linoleate Soap	20	" " "
Water	90	" " "

Procedure: The soap is dispersed in the kerosene and the water added with agitation until emulsification is complete. An alternate method of preparation yielding a clear soap depends upon the mixture of the fatty acid and the solvent to which is added the alkali and water solution.

Use: The product is used by dissolving approximately 4 oz. of the soap in a 3 gallon pail of water and applying this solution to the car.

2. *Soapless Cleaner*

Emulsifier "M"	10	lbs.
Water .... q.s. to make a total of	10	gals.

Procedure: The emulsifier is dissolved in the water (cold) and used as directed.

Use: The entire use of this type of product has been described in a preceding part of this article. About 4 oz. is dissolved in a 3 gallon pail of cold water and the solution applied to the car body with a sponge. It is then rinsed off with running water and the car allowed to dry without rubbing or towelling in a cool or shady spot.

Miscellaneous Preparations

1. *Radiator Stop Leak Liquid*

Flax Seed Meal (Fine)	20	lbs.
Ground Gum Gambier	60	"
Alcohol (C. D. 5)	7	gals.
Water	35	gals.

Procedure: The meal and the gum are dispersed in the alcohol and the water added with stirring.

2. *Radiator Stop Leak (Powder)*

Flax Seed Meal (Fine)	70	lbs.
Aluminum Bronze Powder	30	"

Procedure: Mix and pack either in cans or in large capsules.

3. *Radiator Cleaning Powder*

Soda Ash Powder, or
T. S. P. Powder or
Sodium Silicate Solution (Dilute)

4. *Valve Grinding Compound (Water Base)*

Silicon Carbide Powder	15	lbs.
Carborundum Powder	15	"
Glycerine or Glycol	1	"
Lampblack	1½	oz.
Water	5	gals.
Bentonite	23	lbs.

Procedure: The abrasive and bentonite are mixed together with the lampblack and a smooth paste made with the water and glycerine.

5. *Valve Grinding Compound (Oil Base)*

Silicon Carbide Powder	30	lbs.
Carborundum Powder	100	"
Lampblack	½	"
Light Technical Mineral Oil	8	gals.

Procedure: Mix the powders and the lampblack thoroughly and disperse in the oil.

6. *Neatsfoot Oil Compound*

Neatsfoot Oil, Prime	10	gals.
Mineral Oil, Light Technical	10	"

Procedure: Mix.

7. *Penetrating Oil*

Lubricating Graphite	8	lbs.
Mineral Oil, Light Technical	40	gals.
Shingle Stain Oil	4	"
Kerosene	6	"

Procedure: Mix thoroughly.

8. *Spring and Chassis Spray*

Light Technical Mineral Oil or Spindle Oil	10	gals.
Kerosene	10	"

Procedure: Mix thoroughly.

9. *Waxy Base Spring and Chassis Spray-Squeak Eliminator*

Glycol Monostearate	5	lbs.
Water	8	gals.

Procedure: Melt the monostearate and disperse in boiling water, stirring till cold. Dilute with additional water as required.

10. *Tar Remover (Chassis Cleaner)*

Shingle Stain Oil .....

11. *Tar Remover*

Ethylene Dichloride	12¾	gals.
Mineral Oil, Light Technical	¼	"

Procedure: Mix thoroughly.

12. *Carbon Remover* (Motor Treatment)

Alcohol (C. D. 5)	24	gals.
Ammonia (26 Be)	12	"
Water	9½	"

Procedure: Mix thoroughly.

13. *Carbon Remover* (Motor Treatment)

Alcohol (C. D. 5)	3	gals.
Benzol (80 degree)	3	"
Acetone	3	"
Kerosene	¾	"

Procedure: Mix thoroughly.

14. *Gasket Cement*

Rosin	30.4	lbs.
Batu Gum	13.2	"
Para Rubber	20	"
Acetone	12	gals.
Benzene	35	"

Procedure: Cut the solids in the solvents.

15. *Brake Renewer*

Shingle Stain Oil	24	gals.
Pine Tar Oil	24	"
Neatsfoot Oil, Prime	3	"

Procedure: Mix thoroughly (Solvent).

16. *White Tire Cleaner*

Mineral Spirits	40	gals.
Carbon Tetrachloride	10	"
Acetone	50	"

Procedure: Mix thoroughly.

17. *White Tire Cleaner* (Alkaline)

T. S. P.	80	lbs.
Soda Metasilicate	5	"
Sodium Hydroxide	15	"

Procedure: Mix thoroughly.

Use: Dissolve about 4 oz. in a pail of water and apply with brush. Rinse off with running water.

18. *Running Board Cement*

Sodium Silicate Solution (Dilute)	50	parts
Alkaline Rubber Latex Solution	50	"

Procedure: Mix thoroughly.

19. *Motor Cleaner* (Grease Remover)

Soluble or Sulfonated Oil	2	parts
V. M. P.	1	"

Procedure: Mix thoroughly.

Use: Use about 4 oz. in pail of kerosene, wash motor and then rinse off with running water.

20. *Black Color Restorer* (Rubber Tires)

This product is best prepared from a 12-15% morpholine and carnauba wax self-polishing type emulsion to which is added enough dye solution made from nigrosine and water to render the dry film on rubber sufficiently opaque to restore its original appearance.

Another form of this product which while not glossy in its deposited state as the former can be prepared from the same type of wax emulsion to which is added a small amount of alkaline rubber latex and enough black dye to create the proper color effect.

This product can also be used to refinish such additional parts of a car as the rubber portions of the running board and the rubber floor mats.

21. *Window and Windshield Cleaner*

V. M. P. Naphtha with ½% Paraffin.

22. V. M. P. Naphtha ..... 96 parts
Nitrobenzene ..... 4 "

23. Alcohol and water solutions.

24. Dilute Solutions of sulfonated alcohols in water.

25. *Upholstery Cleaners*

Mixtures of naphtha and carbon tetrachloride or concentrated solutions of sulfonated alcohols in water .

Additional Formulas

The following series of commercial analyses have been derived from various sources and therefore their authenticity cannot be vouched for. The components as well as their indicated amounts seem however to correspond to accustomed usage and practice in automobile chemical product formulation.

A. *Body Polish*

Abrasives	10.0%
Spindle Oil	12.8
Glycerol	1.7
Ammonia	.5
Water	74.5
Gums	.5

B. *Polish*

Solvents	70%
Waxes—Carnauba	25
Ozokerite	5

C. *Auto Polish*

Abrasives	14.42%
Spindle Oil	2.20
Glycerine	1.90
Naphtha	3.92
Gums	.62
Water	76.94

D. *Wax Polish Pad*

Carnauba	12%
Montan	4
Ceresine	2
Paraffin	2
Naphtha	80

New Trade Marks of the Month

370,120

WETSIT
373,432

CLADITE
393,896

396,535

BONNIE-WOOD
412,365

Sun - Drip
417,830

IN-TAG
418,580

Florodol
419,049

STRESSCOAT
419,586

MASTER GUILD
420,037

ZIKOL
421,390

421,592

372,702

397,500

419,163

420,614

WEATHER-TEX
421,777

TROWELAST
421,808

373,101

411,683

UVERITE
419,225

tidy house
421,043

421,878

RECTORSEAL
373,246

Granulo
419,914

"MICROGEL"
421,212

H·T·A·
ZAPONITE
421,921

373,273

415,609

420,427

Duchess
421,221

FETHERZIP
422,066

PARA·PACK
373,415

FIBERFILM
373,433

LAROTANE
421,661

PHTHALOCINE
422,136

Trade Mark Descriptions†

370,120. Phillips Petroleum Co., Bartlesville, Okla.; Oct. 7, '35; for gasoline; since Sept. 27, '35.

372,702. Not subject to opposition. Maroff Co., Portland, Ore.; June 19, '39; for furniture polish and scratch remover; use since June 1, '37.

373,101. Not subject to opposition. The Franklin Glue Co., Columbus, O.; Apr. 19, '38; for glue; since Sept. 1, '35.

373,246. Not subject to opposition. Rector Well Equipment Co., Inc., Fort Worth, Tex.; Aug. 12, '38; for liquid thread fillers and sealing compounds remaining plastic, for application to pipe threads, tank walls, etc.; since Apr. 1, '38.

373,273. Not subject to opposition. Yakima Valley Spray Co., Yakima, Wash.; Sept. 18, '39; for fertilizers; since April, '37.

373,415. Not subject to opposition. Odora Co., Inc., N. Y. City; Jan. 6, '38; for moth cakes; since Oct. 27, '37.

373,433. Not subject to opposition. Ludwig Durlacher, N. Y. City; Nov. 10, '38; for water- and stain-repellent and/or waterproof finishes for textiles; since Sept. 12, '38.

373,432. Not subject to opposition. Jacques Wolf & Co., Clifton, N. J.; Oct. 28, '38; for a synthetic wetting agent, detergent, and penetrant; since Aug. 10, '38.

393,896. Cladite, Inc., N. Y. City; June 10, '37; for metallic-content liquid composition, being a paint adapted to form a protective finish; since May 1, '36.

396,535. H-C Prods. Co., Detroit, Mich.; Aug. 18, '37; for deodorizing cleaner for floors, walls, woodwork, etc. and a sterilizing cleaner for china, silver, and glass; since July, 1936.

397,500. Cook Paint & Varnish Co., No. Kansas City, Mo.; Sept. 17, '37; for ready-mixed paints; since Sept. 15, 1913.

411,683. Dryer, Clark & Dryer Oil Co., Oklahoma City, Okla.; Oct. 17, '38; for lubricating oils and greases; since June, 1926.

415,609. Pelican Prods. Co., N. Y. City; Feb. 4, '39; for shoe polish; since Jan. 25, '39.

412,365. Reliance Varnish Co., Inc., Louisville, Ky.; Nov. 3, '38; for stains, varnishes, lacquers, and ready-mixed and paste paints and paint enamels; since Sept. 12, 1918.

417,830. Will & Baumer Candle Co., Inc., Syracuse, N. Y.; Apr. 3, '39; for candles; since Sept. 1, '37.

418,580. Interchemical Corp., N. Y. City; Apr. 22, '39; for rotogravure inks, ink varnishes; and ink dry colors; use since Jan. 8, 1914.

419,049. Tekniska Aktiebolaget Flora, Gavle, Sweden; May 3, '39; for soap and soap powder; since 1905.

419,163. The Sherwin-Williams Co., Cleveland, O.; May 6, '39; for paints, varnishes, etc.; also, for polishing compounds and waxes; since March, 1902.

419,225. The Harshaw Chem. Co., Cleveland, O.; May 9, '39; for opaquing agents used in the mfr. of vitreous enamels; use since Nov. 1, '37.

419,914. The Hewitt Soap Co., Inc., Dayton, O.; May 27, '39; for granulated soap; use since Feb. 10, '37.

420,429. Puritan Compressed Gas Corp., Kansas City, Mo.; June 12, '39; for medical gases, including CO_2, C_2H_4, H_2, He_2 cyclopropane, N_2O, O_2, and various mixtures thereof; since Sept. 15, '34.

419,586. Magnaflux Corp., Chicago, Ill.; May 19, '39; for brittle varnish used in detecting flaws in metallic articles; use since Nov. 14, '38.

420,037. Minnesota Linseed Oil Paint Co., Minneapolis, Minn.; May 31, '39; for paints of all kinds in liquid and paste form, and varnishes; since March, 1933.

420,614. David G. Ulrey, Lakeland, Fla.; June 17, '39; for citrus fruit polishing wax; use since May 15, '38.

421,043. Vernon B. Hunt (Tidy House Prods. Co.), Des Moines, Ia.; June 28, '39; for various household specialties; since June 9, '39.

421,212. Tennessee Copper Co., Copperhill, Tenn.; July 1, '39; for copper fungicide; since Feb. 14, '39.

421,221. Lanco Prods. Co., Brooklyn, N. Y.; June 29, '39; for no-rubbing floor wax; since Jan. 1, '38.

421,661. Lang & Rodkey, Warren, O.; July 17, '39; for liquid gas fuel used in gas machine units; since January, '37.

421,390. Newport Industries, Inc., Pensacola, Fla.; July 8, '39; for zinc-treated rosin solution in petroleum solvent; since Oct. 12, '38.

421,592. Aluminate Co., Pittsburgh, Pa.; July 15, '39; for cleaning fluids for metals and glassware; since May 15, '39.

421,777. Interstate Laboratories, Inc., L. I. City, N. Y.; July 20, '39; for preparation preventing stains, mildew, rust on fabric, also making same water repellent; use since Sept. 15, '38.

421,808. Estate of H. B. Fred. Kuhls, N. Y. City; July 21, '39; for preparation in the nature of a caulking compound for waterproofing and filling various metal, wood, and other building materials; since Jan. 1, '39.

421,878. Hobson-McFarland Tractor Co., Kansas City, Mo.; July 24, '39; for lubricating greases; since May 27, '39.

421,921. Atlas Powder Co., Wilmington, Del.; July 25, '39; for ready-mixed paints and paint enamels, varnishes, paint colors, and the like; use since June 2, '39.

422,066. National Wax Co., Chicago, Ill.; July 28, '39; for wax composition for defeathering fowl or dehairing animals; since Oct. 28, '38.

422,136. Fred. L. Lavanburg Co., Inc., Brooklyn, N. Y.; July 31, '39; for toners and lakes for use in paint enamels, lacquers, and colored varnishes; since April, 1939.

† Trademarks reproduced and described include those appearing in the *U. S. Patent Gazettes*, Nov. 21 to Dec. 12, inclusive.

New Producing Unit

Proctor Chemical Co., Charlotte, N. C., manufacturer of textile chemicals, has established a production unit in Salisbury, N. C., and is now engaged in making specialties for the textile trades.

Kelco Appoints

Kelco Company, N. Y. City, has appointed to its Central division 2 new representatives: E. F. Gore will have headquarters in Indianapolis and M. L. Lamphere will be located in Kansas City, Mo.

ADVERTISING PAGES REMOVED

New Trade Marks of the Month

(*Trade Mark Descriptions Continued*)

422,139. The Lubri-Zol Corp., Wickliffe, O.; July 31, '39; for lubricating oils and greases, lubricating oil compounds, and motor lubricating oils; since June 20, '39.

422,140. The Lubri-Zol Corp., Wickliffe, O.; July 31, '39; for lubricating oils and greases, lubricating oil compounds, and motor lubricating oils; since July 20, '39.

422,147. Notions, Inc., N. Y. City; July 31, '39; for chemically treated polishing cloths; use since July 1, '39.

422,182. The Sherwin-Williams Co., Cleveland, O.; Aug. 1, '39; for plastic asphalt or coal-tar materials, as coating compounds; use since June 13, '39.

422,201. Franklin J. Drivness (Franklin Chem. Co.), Rochester, N. Y.; Aug. 2, '39; for powdered alkaline water softener having incidental cleaning properties; since Apr. 1, '38.

422,317. City Service Floor Maintenance Co., Inc., N. Y. City; Aug. 5, '39; for varnish-type finish for wood floor surfaces; use since Sept., 1933.

422,363. Keasbey & Mattison Co., Ambler, Pa.; Aug. 7, '39; for various asbestos products; since Oct. 1, '37.

422,423-4. Turner-Pfister Chem. Corp., Ridgefield, N. J.; Aug. 8, '39; for liquid chemical compositions for waterproofing concrete, stucco, brick, plaster, asbestos, etc.; use since May 14, '38.

422,425. Turner-Pfister Chem. Corp., Ridgefield, N. J.; Aug. 8, '39; for chemical waterproofing liquids for application to concrete, stucco, plaster, insulating boards, asbestos, and the like; use since May 14, '39.

422,426. Turner-Pfister Chem. Corp., Ridgefield, N. J.; Aug. 8, '39; for liquid paper size; use since Nov. 16, '36.

422,447. George A. Morty Co., Miami, Fla.; Aug. 9, '39; for insecticides used on domestic animals; since July 21, '39.

422,476. John G. Jones (Jones Bros. Co.), Chicago, Ill.; Aug. 10, '39; for glass cleanser; use since July 11, '39.

422,493. Swift & Co., Chicago, Ill.; Aug. 10, '39; for glue; use since July 13, '39.

422,554. Pennsylvania Alcohol Corp., Phila., Pa.; Aug. 12, '39; for alcoholic solvent having general industrial use; use since Mar. 31, '31.

422,648. American Turpentine Farmers Ass'n. Co-Operative; Valdosta, Ga.; Aug. 16, '39; for turpentine; use since Jan. 28, '39.

422,623. Ceramic Products Co., Kewaunee, Wisc.; Aug. 15, '39; for ceramic laboratory ware; since Apr. 1, '37.

422,697. Forman, Ford, and Co., Minneapolis, Minn.; Aug. 17, '39; for various paints and painters' supplies; since 1900.

422,710. The National Refining Co., Cleveland, O.; Aug. 17, '39; for fluid lubricants; since Aug. 1, '39.

422,721. Triple E Products, Inc., N. Y. City; Aug. 17, '39; for products improving the combustion of fuels and eliminating or reducing of waste products, soot, smoke, and obnoxious odors; since July 29, '39.

422,773. The Davies-Young Soap Co., Dayton, O.; Aug. 19, '39; for liquid dry cleaner; use since July 25, '39.

422,802. American Rust Eradicator Co., Auburn, N. Y.; Aug. 21, '39; for preparation removing rust and stains from metal; since July 1, '39.

422,849. Ansbacher Siegle Corp., N. Y. City; Aug. 22, '39; for insecticidal material; since Aug. 2, '30.

422,850. Bird & Son, Inc., E. Walpole, Mass.; Aug. 22, '39; for floor and wall covering having a wearing layer of plastic material consisting essentially of powdered wood and binder; since Aug. 11, '39.

422,908. Quaker Chem. Prods. Corp., Conshohocken, Pa.; Aug. 23, '39; for resins, and for aqueous and nonaqueous dispersions and emulsions thereof, as textile finishing materials; use since Mar. 22, '39.

422,915. Steel-Wedeles Co., Chicago, Ill.; Aug. 23, '39; for household cleaner; use since Mar. 10, '39.

422,953. Penna. Salt Mfg. Co. of Washington, Tacoma, Wash.; Aug. 24, '39; for concentrated sodium arsenite solution as a weed killer; use since May 2, '39.

422,955. Riegel Paper Corp., Riegelsville, N. J., and N. Y. City; Aug. 24, '39; for chemical applied to wrapping paper for retarding mold formation; use since July 27, '39.

422,974. Hooker Electrochemical Co., Niagara Falls, N. Y.; Aug. 24, '39; for various industrial chemicals; since July 21, '39.

422,988. Louis A. Demely (Hycin Labs.), Baltimore, Md.; Aug. 25, '39; for automobile polish; since April, 1937.

423,201. J. T. Baker Chem. Co., Phillipsburg, N. J.; Sept. 1, '39; for magnesium citrate; use since Aug. 25, '39.

423,214. Jamesen Chem. Corp., Brooklyn, N. Y.; Sept. 1, '39; for bleaching and deodorizing preparation having incidental cleansing properties; since May, 1939.

423,284. George W. Yengel (Malbone Co.), Brooklyn, N. Y.; Sept. 2, '39; for penetrating, lubricating, and spray oils used in the automotive industry; use since Oct., 1936.

423,381. Clarence J. Herrett, Bremerton, Wash.; Sept. 7, '39; for cream-form general cleanser; use since Aug. 1, '39.

423,475. Standard Oil Co. of Calif.; Wilmington, Del.; and San Francisco, Calif.; Sept. 9, '39; for liquid hydrocarbon polymers of lubricating oil type, having high viscosity, comparative freedom from color bodies, and having chemical inertness and adhesiveness; use since Aug. 18, '39.

423,522. The Curran Corp., Malden, Mass.; Sept. 12, '39; for emulsifying and scouring solvent for cleaning, desludging, and decarbonizing the inside of gasoline or Diesel engines; since 1933.

423,525. The English Mica Co., Spruce Pine, N. C.; Sept. 12, '39; for powdered mica; use since Mar. 1, '38.

423,757. Federal Mining & Mfg. Co., Jersey City, N. J.; Sept. 20, '39; for cleaning fluid used as a general solvent for dirt, fat, grease, and oil; since Aug. 1, '35.

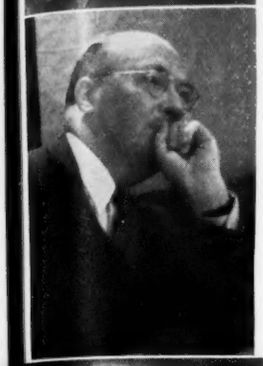
423,850. Detroit Oil Co., Detroit, Mich.; Sept. 22, '39; for motor oil; since May 17, '39.

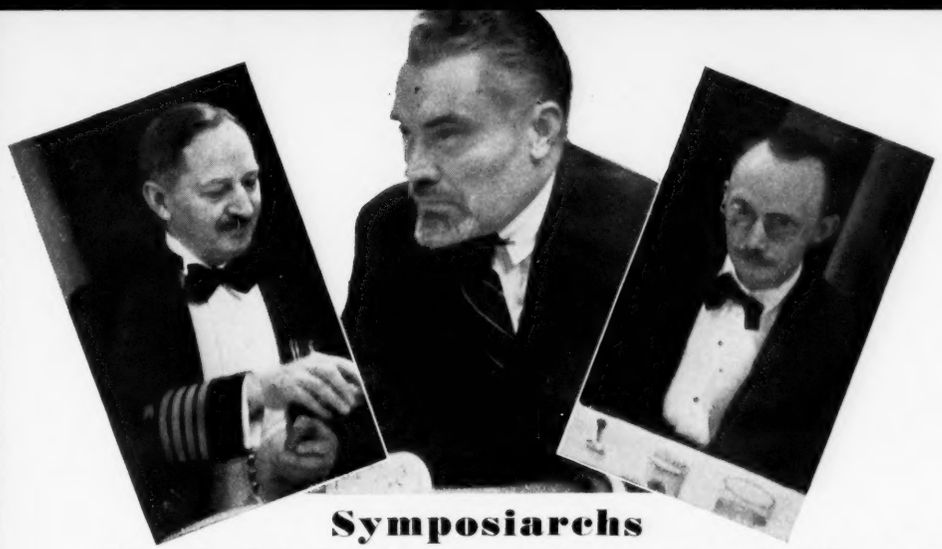
423,860. Paragon Oil Co., Inc., Brooklyn, N. Y.; Sept. 22, '39; for lubricating oils and greases; since June 13, '39.

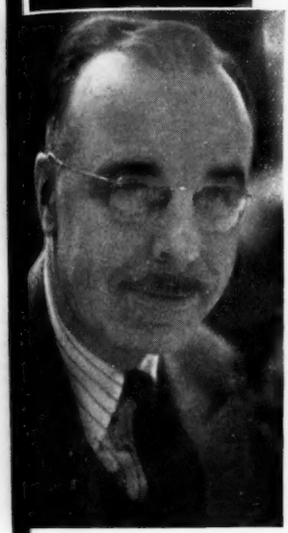
423,911. Gulf Oil Corp., Pittsburgh, Pa.; Sept. 25, '39; for lubricating oils; since Aug. 1, 1916.

R. C. Whitman is now with Agicide Labs., Inc., Milwaukee. He had been with Monsanto Chem. Co. for the past 10 years. Mr. Whitman is eastern district manager for Agicide's technical service department.

The former Noll & Fischer fat rendering plant in Newark, N. J., has been leased by the Valley Chemical Co., manufacturer of dry colors.

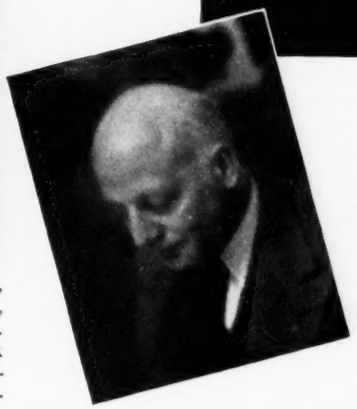






Symposiarchs

"Modern Sea Warfare" was the topic of the January symposium at the Chemists' Club (N. Y.). Speakers were Capt. Chester G. Mayo, U. S. N.; Lowell M. Limpus, author of "20th Century Warfare"; and Fletcher Pratt, author of "Sea Power." Among the audience were: right (top) Dr. Norman A. Shepard, Cyanamid; Dr. Martin H. Ittner, Colgate; J. G. Detwiler, Texas Co.



Above, John Allen, *Inland Printer*, deep-sea sailor, who acted as toastmaster, and Dr. D. P. Morgan, chemical economist who was club host. Left, George S. Armstrong, consultant; right. A. L. Carrad, Imperial Chemical Industries.

Top to bottom, Robert T. Baldwin, consultant; Dr. Paul Giesy, Newark College of Engineering; S. L. Tyler, A. I. Ch. E.

A. I. C. Hears Landis Discuss Training Executives

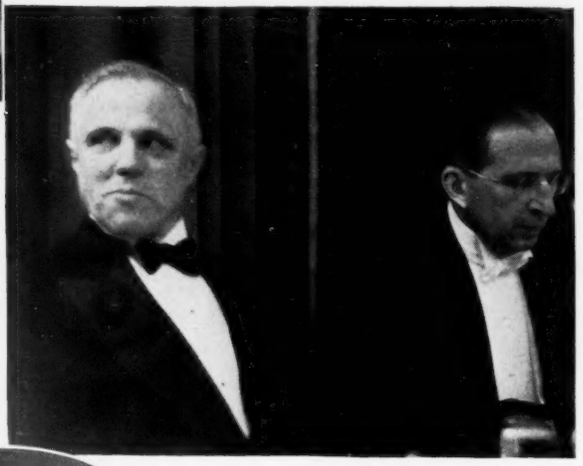
Dr. Walter S. Landis, Cyanamid vice-president, outlined for the N. Y. Section of the American Institute of Chemists on Jan. 19, his views on executive training before a large audience of technical and non-technical men. At the right, D. H. Jackson, Croll-Reynolds, secretary of the section, Dr. Landis, and Dr. Harry Lindwall, N. Y. U., chairman. Top left, Dr. Robert J. Moore, Bakelite, national president of the Institute. Below, Dr. Joseph Mattiello, research director, Hilo Varnish; Below, right, R. D. Buck, Du Pont; S. F. Urban, Squibb purchasing agent; and E. J. McGuire, Du Pont.

New Chemicals For Industry

Chemical Industries' display of "New Chemicals for Industry," shown first at the Chemical Exposition, attracted wide attention at the "Open House Party" of Brooklyn "Poly," held on Jan. 12.

★

Below left, Dr. Karl T. Compton, president of M. I. T.; right, Lammot du Pont, president, E. I. du Pont de Nemours & Co., at Perkin Medal dinner.



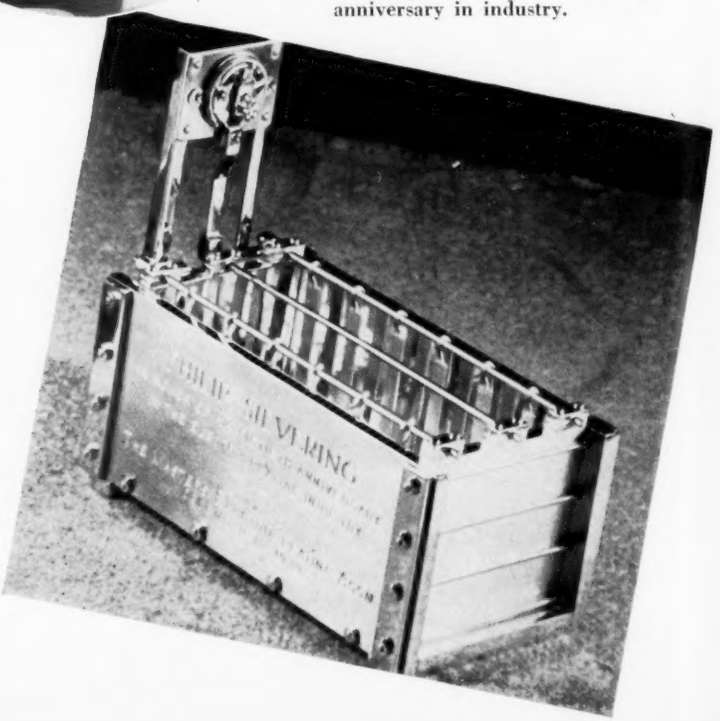
At the left, Thomas Midgley, Jr., vice-president, Ethyl Gasoline Corp., and Prof. Marston T. Bogert, Columbia.

Perkin Medal Award

Perkin Medalist: Right, Dr. Charles M. A. Stine, Du Pont vice-president and director of research, who received on Jan. 12 the Medal of the Society of Chemical Industry, chatting with Dr. Harrison E. Howe, editor, *Industrial & Engineering Chemistry*.

Below—C. W. Comstock, consulting chemist, is greeted by flight steward as he boards Eastern Airliner enroute to Chile.

Below—Handmade brass model of electroplating tank, presented to Philip Sievering, president, Philip Sievering, Inc., by Masters' Electro-plating Assn. on his 50th anniversary in industry.



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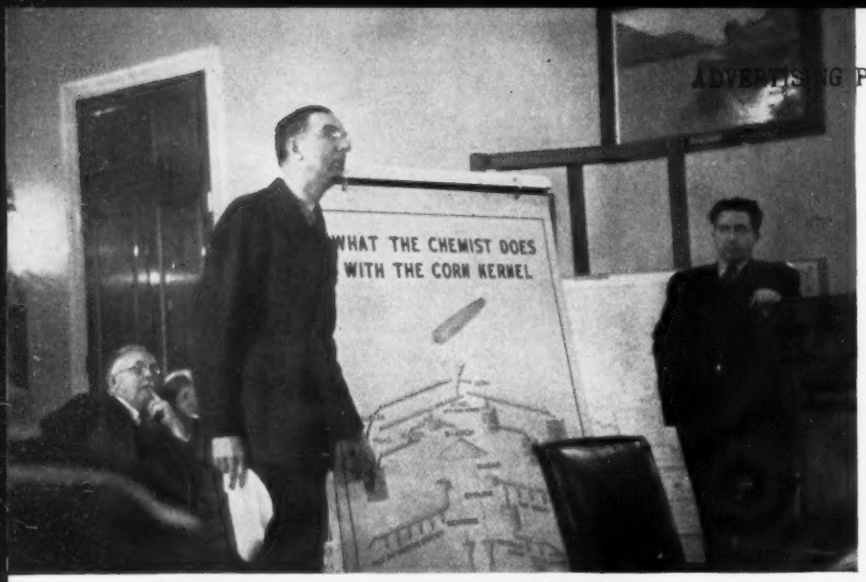


Farm Chemurgy Goes to Washington

To Washington on Jan. 8 went over 100 industrialists, farm movement leaders and chemurgists to appear before a subcommittee set up by House Minority Leader Joseph W. Martin, Jr., as a part of a large Republican committee now studying the farm problem. At the left, Morris Sayre, vice-president, Corn Products Refining, explaining the industrial uses of corn. Below, left, Dr. William J. Hale, chemical consultant; right, Carl B. Fritsche, manager, Plastics Division, Reichhold Chemicals, Inc.

Above, Rep. Clifford Hope, Kansas, prominent member of the committee; left, A. G. H. Reimold, president, Woburn Degreasing; right, George W. Priest of the same company. At the extreme right, Ernest L. Anthony, Dean, Michigan State College of Agriculture.

This group, headed by Dr. Karl T. Compton, president, M. I. T., is convened to study the creations and discoveries of the nation's inventors and research workers during the past quarter century. From among them the committee of scientists is selecting those who will be honored as "Modern Pioneers." Left to right: Dr. Compton, chairman; Dr. Ralph Barton, director, American Institute of Physics; Dr. George B. Pegram, Dean, Graduate Faculties of Columbia; Dr. Edward R. Weidlein, director, Mellon; Dr. John T. Tate, Dean, College of Science, Literature and the Arts of the University of Minnesota; Dr. Frank C. Witmore, Dean, School of Chemistry and Physics, Penn. State; Dr. Forest R. Moulton, secretary, American Assn. for Advancement of Science.

NEWS OF THE MONTH

News Index

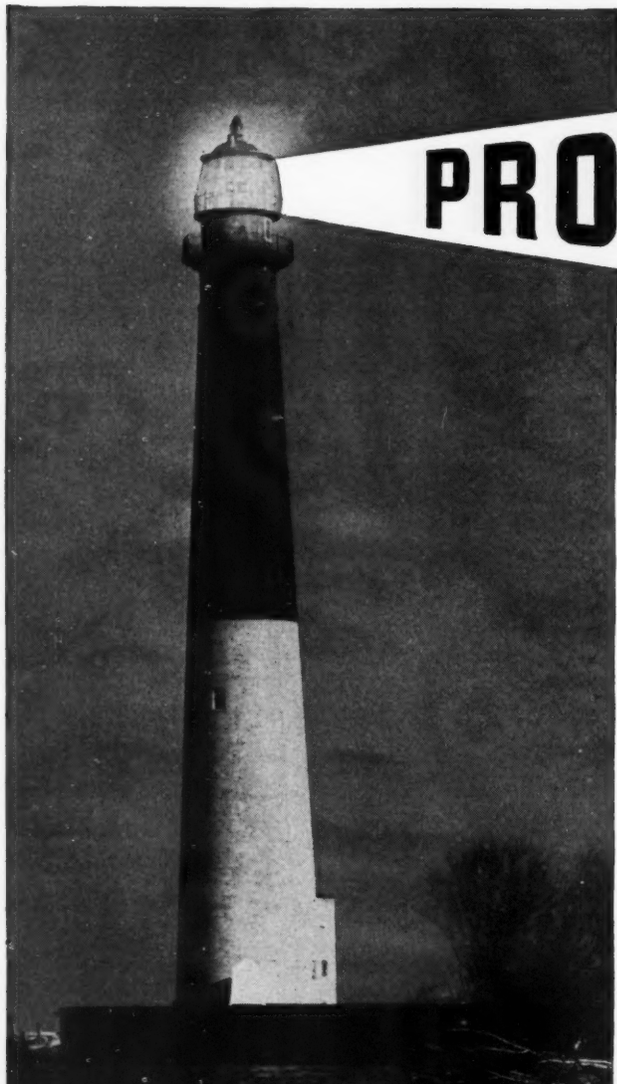
General News	211
Washington	212
Heavy Chemicals	214
Coal-Tar Chemicals	215
Specialties	216
Solvents	217
Fine Chemicals	219
Raw Materials	221
Pigments, Fillers, etc.	222
Agricultural Chemicals	224

Studying Subatomic Collisions at Westinghouse

First public demonstration of Westinghouse atom smasher was made Jan. 29 at Westinghouse Research Laboratories, East Pittsburgh, Pa. Two company technicians are shown above studying subatomic collisions, caused by atom smasher, through a high-pressure Wilson cloud chamber. It consists of chamber with movable wall, filled with clean, moist air. As wall is lowered, moist air expands, cools, and moisture condenses in droplets about the charged particles making them visible.

IN REVIEW

CHEMICAL INDUSTRIES



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WOOD COKE FOR WESTERN STEEL

Federal Government Agencies Reported Investigating Ruzicka Patents For Wood Coke Briquets as First Step In Developing a Northwest Metallurgical Industry— "Buna" To Be Made Here—A.C.S. Announces Program—

IMMEDIATE plans for establishment of a plant at Vancouver, Wash., opposite Portland, is seen in some Washington quarters, as first step in development of a Pacific Northwest metallurgical, electrochemical industry. Such a development stressed as desirable from a military defense angle would have secondary advantage of bringing into productive use huge electric power projects at Booneville and Grand Coulee Dams. The Aluminum Co. of America has already contracted for power from the former.

Chief deterrent to iron and steel production, seen as answer to electrical consumption problem, has been scarcity of coking coal for blast furnace operations. Removal of this drawback through Ruzicka wood coke process, recently patented, however, is predicted. Forest Service, Bureau of Mines, other government agencies are investigating its practical applications, already obtaining opinion of one steel expert that it has promising aspects.

Ruzicka patent would reclaim much sawdust, other mill-waste of Northwest lumber industry. Process itself uses powdered charcoal, mixing it with a binder to form briquets, coking them in cokeoven to produce a product said to be superior to coal coke for metallurgical purposes. Use of sawdust waste, it is pointed out, prevents waste of material as is found in process for ordinary wood charcoal for fuel use.

This process would bring into production some wood chemicals notably pine oil, acetic acid, methanol, and acetate of lime, though yield of Northwest softwoods probably would be smaller than that of Midwestern hardwoods and Southern pine.

Two large steel companies are understood to be investigating possibility of Northwest producing units. Such plants, if established would result in utilization of limestone, magnesite, fireclays, olivine, chromite, brucite, silica, and pinite deposits in Columbia river basin, availability and suitability of which have been thoroughly charted by government engineers.

To Make "Buna"

"Buna" synthetic rubber will be manufactured in the U. S. on a commercial scale by the end of this year, it was learned by CHEMICAL INDUSTRIES. Product will be manufactured under German I. G. Farbenindustries patents recently acquired by Standard Oil of New Jersey and marketed at "substantially less" than $1 a pound asked for foreign "buna." Authoritative sources place first price at 3 to 4 times present crude rubber price.

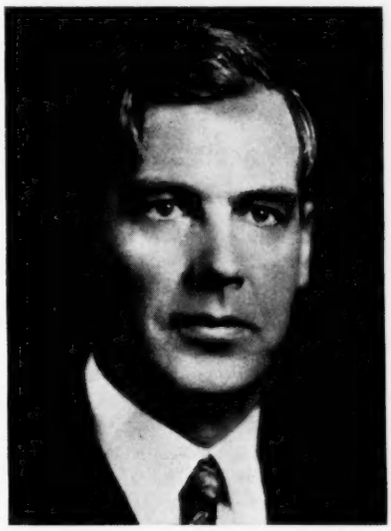
Major tire companies are negotiating with Standard for licensee rights. Outcome of these negotiations will decide whether first U. S. "buna" plant will be built and operated in Akron or some other rubber center by tire companies as licensees, or whether Standard will build a plant in one of its refineries. In either case, large scale production is assured within the year, it was disclosed.

Reason for transfer of foreign patents is said to be difficulty of trade due to war conditions. Choice of Standard Oil by I. G. probably stems from fact that S. O. technicians cooperated in early development work on "buna."

Entrance of the new producer swells synthetic rubber manufacturers to four, others being Du Pont, Dow Chemical, and Goodrich.

A.C.S. at Cincinnati, April 8-12

Industrial research will be spotlighted at A.C.S. sessions scheduled to bring 3,500 chemists to Cincinnati, April 8-12, for 99th meeting.



PROCTER THOMSON

General chairman for Cincinnati A.C.S. Meeting.

Ten symposia on program embrace: utilization of agricultural wastes; cellulose plastics; combustion of solid fuels; chemistry of insulation; sulfanilamide and related derivatives; sterols and lipoids; application of mathematics to chemistry; fundamental chemical thermodynamics of hydrocarbons and their derivatives; phase transitions; and the future of chemistry as a specialized science in high school curriculums.

Out of these discussions are expected to come new avenues of expansion for the industry, fresh outlets for products of agriculture, and a new chapter in world scientific literature.

Dr. Alfred Springer, eighty-six year old dean of Cincinnati chemists will be honorary chairman of meeting being sponsored by Cincinnati section. Procter Thomson, head of Standards Department, Chemical Division of Procter and Gamble will be general chairman. Mr. Thomson is also Cincinnati Section's president-elect.

Members of local committee include: Profs. Wayland M. Burgess and Francis E. Ray of University of Cincinnati; N. Beverley Tucker, Arnon O. Snoddy, and John T. R. Andrews, Procter and Gamble research chemists; Daniel J. Kooyman, Procter and Gamble research biochemist; Wilmer C. Gangloff, chemical director, Drackett Chemical; Everett R. Brunskill, assistant manager, Cincinnati Chemical Works; Howard Ecker, Howard Ecker Chemical Laboratories; Eugene B. Duffy, department of chemistry head, Ohio Mechanics Institute; Harold W. Greider, research director, Philip Carey Manufacturing Co.; Chester H. Allen, research chemist, Hilton-Davis.

Westinghouse Research Party

Westinghouse metallurgists have developed a new steel hardening furnace using a "blanket" of gas to prevent "singeing" metal while hardening at temperatures as high as 2,000° F. Dr. A. A. Bates, Westinghouse chemical and metallurgical division manager, and Howard C. Scott, research metallurgist, declared furnace has produced new die steel hard enough to scratch glass. Dies made from the metal can be air-hardened without appreciable distortion.

New Metal for Dies

Principal ingredients of new hard steel are iron, vanadium, molybdenum, chromium. Metallurgists estimate potential economies from 40 to 60 per cent. in die manufacture with new metal. Previously, unless made from most expensive high speed steels, dies used in automotive and electrical industry, had to be cut from a block of steel, shaped and hardened by cooling quickly in liquid, then machined to correct their distortion. These developments were a few of the several disclosed at the recent Westinghouse "Preview of Research for 1940" held at the East Pittsburgh laboratories of the company on Jan. 29 before a distinguished group of college professors, engineers and technical editors.

Washington

Russell Kent

HERE are the highlights of the legislative outlook as Congress swings into second month of the session:

Certain—Great caution in regard to foreign affairs, accompanied by close scrutiny of all national defense proposals; political weighing, partisan and individual, of all moves; an atmosphere of economy, at least until late in the session.

Chances Favor—Changes in the National Labor Relations Act, the Wage-Hour Act, and the Walsh-Healey Government Contracts Act; extension of the Reciprocal Trade Agreement Act, with at least a better than even prospect no strings will be attached; enactment of the Water Pollution bill substantially in the form in which it passed the Senate last year.

Chances Oppose—Additional taxes or an increase in the debt limit; any major anti-trust legislation; any material liberalization of the competitive bid method of awarding Government contracts; any major social legislation; any new regulatory legislation except, possibly, a bill affecting investment trusts and, also possibly, one restricting branch banking.

The session has progressed sufficiently to outline a pattern and permit determination of sketchy categories, such as these stated, of subjects of outstanding importance to business interests.

With regard to labor legislation, it should be emphasized that while amendment of all three laws mentioned appears definitely in the cards, it is not likely that any one of the three will be changed to the extent that either industry or labor is demanding through important groups.

Thus, about the only point apparently certain with regard to the Wagner Labor Relations Act is the enlargement of the Board to a membership of five or seven, accompanied by an effort to enact a mediation law. The administration has been advised by congressional leaders to offer a mild bill in an effort to channel whatever legislation is to come.

There will be delay in Wage-Hour amendments by mutual consent of all factions to afford Col. Philip Fleming an opportunity to demonstrate what he can do as administrator in his own right without congressional action.

Walsh-Healey contracts will be dropped to a minimum of $4,000 from the present $10,000, and the provisions will be extended to sub-contractors, but labor's proposal that penalties be included for infractions of the Wagner Act is not favored.

Tender handling of the Finnish credit proposal is indicative of the disposition in Congress to avoid the appearance of foreign entanglements.

National defense is being studied from two standpoints (1) the scope and direction of appropriations and (2) a disposition to withhold expected requests for broader executive discretion in the name of national defense.

It is no secret that both Army and Navy have experienced difficulties with some of their contracts and that Army, particularly, is disappointed in the schedule of some of its deliveries. Both would like to have authority to negotiate contracts without competitive bidding and otherwise to accelerate and facilitate purchases. But Navy Secretary Edison's letter suggesting legislation to empower the President to commandeer factories, etc., in an emergency in advance of war—a letter regarding which interesting stories are being told and which the Secretary speedily characterized as "mere routine"—frightened Congress.

The Treasury has been slow in making advance commitments for depreciation allowances on plant facilities constructed for execution of national defense orders and flatly refused to extend this policy to facilities for fulfillment of orders from foreign governments. There has been talk of seeking legislation to reach this situation.

Some additional leeway in placing contracts may be provided, but nothing so far-reaching as the executive agencies once nursed as a hope appears possible. It is certain that any legislative proposal looking toward allocation of orders to facilitate a flow of munitions to Great Britain and France would create a storm within Congress.

The isolationist spirit rides higher now than in many years. Yet many observers believe it would weaken under the force of major action in the European war.

The administration is bringing unusual pressure to bear upon Democratic members of the Senate and the House to obtain enactment of the bill to extend for three years the authority to negotiate trade pacts. President Roosevelt is supporting Secretary Hull fully on this issue. The plea is being made that the Republicans apparently intend to carry this subject into the campaign and that in the face of this threat there should be no marked division among the Democrats.

As for taxes, the suggestion of the President that $460,000,000 additional be levied to pay for the scheduled "extraordinary" national defense program remains coldly received in Congress. Tax increases are unpopular in an election year. In addition, tax leaders see the defect that the sum sought for added defense expenditures is on the basis of part of the present fiscal year and all of the fiscal year 1941, but there is no projection of what may be necessary, above normal, to carry forward the national defense program in the succeeding fiscal year. They point out it is difficult to frame a tax program for a single year with uncertainty whether its renewal, or a change up or down, may be necessary the following year if the same "pay as you go" policy is to be adopted.

In any event, the House Ways and Means Committee will not consider the subject until after returns from the March 15 income tax filings have been received. Taxes are not an impossibility, but the chances as matters stand definitely are against them.

Budget Reductions

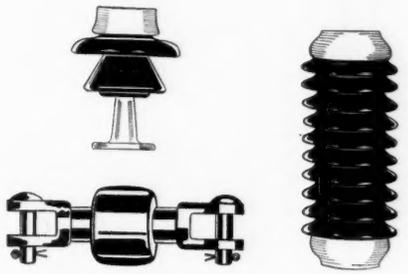
President Roosevelt asked for economy. In the first few appropriation bills which have been considered this session, Congress has gone far below the President's "bedrock" budget. Pet projects of the President have been slashed but also there have been heavy cuts in items which are pets of important congressional blocs.

It should be noted, however, that in important instances the reductions, both those proposed by the Budget and those made by congressional action, are more apparent than real. Such heavy items as millions lopped off the ship construction fund of the Maritime Commission and other millions stricken out of Army and Navy appropriations are deferments; Congress did not say "you cannot have this money." What it said was, in effect, "we will not give you this money now for we do not believe you can spend it as fast as you have projected."

There are gaps, too, in the Budget proposals. For example, it costs around $37,000,000 a year to support the bonds of the Federal Land Banks, because legislation has been enacted lowering the interest rate borrowers pay below the interest borne by these bonds. The Budget made no provision for the payment in 1941; it must be paid, so an appropriation will be made later. Again: The Budget

PURE SULPHUR

THE VERSATILE ELEMENT



Making Use of Its Electrical Properties

Materials	Di-electric Constants	Volume Resistivity ohm/cm.	Surface Resistivity ohm/cm.	
			50% humidity	90% humidity
Air	1.0			
Ebonite	2.79	1×10^{18}	3×10^{15}	2×10^{9}
Sulphur	4.03	1×10^{17}	7×10^{15}	1×10^{14}
Bakelite No. 1		2×10^{11}	3×10^{11}	2×10^{8}
Quartz	4.60			
Mica		2×10^{17}	2×10^{13}	8×10^{9}
Water	80.00			

In the assembly of certain types of electrical insulators and lightning arresters, Sulphur or Sulphur cements are used to join metal parts to porcelain. These are used because they combine strength, skin-resistivity, and low electrical conductivity ⋄ ⋄ ⋄ Other new and interesting uses of Sulphur will be discussed later.

TEXAS GULF SULPHUR CO.
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proposed $42,000,000 for refund of taxes erroneously collected in the fiscal year 1941. This was an increase of $4,000,000 over the sum appropriated a year ago for refunds in 1940. Yet on the very day that the House passed the bill carrying this $42,000,000 for 1941, it also passed a deficiency bill carrying $29,000,000 to be added to the $38,000,000 originally appropriated for that purpose in 1940, with a warning that revenues are increasing and therefore refunds will increase.

There is a warning for the T. V. A. in the House action on its appropriation bill. The House approved the $40,000,000 asked by the Budget Bureau for this agency for its power, navigation, fertilizer and other activities. But a Democratic motion to cut this sum in half failed by the narrow margin of 104 to 110 on a teller vote. T. V. A. is to devote $3,707,000 to its fertilizer program in the 1941 fiscal year, an increase of $233,000 and $1,040,000 of the total will go toward completion of the agglomerating and washing plant. Details of its fertilizer program show no marked change in the year.

There is doubt that Congress will renew its joint committee to investigate phosphate resources. It was created in 1938 on a resolution by Senator James P. Pope, of Idaho. Senator Pope failed to return to the Senate and became a director of T. V. A. It reported in 1939, regarding phosphate rock deposits and the necessity for a domestic potash supply and urged private industry to go more heavily into production of triple superphosphate. It was given $5,000 to continue its work. It held no meeting during 1939 and spent no money. Representative Peterson, of Florida, as acting chairman, reported this to the House as the committee expired in January and introduced legislation to continue it.

The four regional research laboratories of the Department of Agriculture will be completed this year, sometime in the fall, but prospective reductions in appropriations will permit little work in chemistry or engineering during the 1941 fiscal year.

Little attention has been paid to the fact that money is being appropriated for two highly important new inquiries by the Federal Trade Commission. The 1941 appropriation bill for that agency provides $88,829 for that agency to start a study of the costs of methods and costs of distribution, including the place of national advertising in that picture. It also provides $61,171 to start collecting and analyzing financial reports of industrial corporations, a project the Commission has had in mind since 1916. In connection with this latter study, it is proposed, the first year, to require not less than 1,000 corporations in from 80 to 100 industries to submit periodic reports.

Heavy Chemicals

Spot Purchasing Off From December Level

Slackening Demand Stumps Producers—'War' Inventories Discounted as Factor—Cobalt Oxide Production Planned Here From South African Ore—Gallic, Tannic Strong

SLIGHT flurry of strength evident in industrial chemical market at the beginning of last month flattened out, with spot buying interest disappearing almost entirely. Shipments against contracts went forward actively but on actual replacement basis only.

Shipments on agricultural insecticides, fungicides were dealt a blow by sub-zero wave that swept most sections of the country. Southern truck and fruit crops damage was reflected in shipments of the two agricultural items.

Many producers are hard put to place a finger on the cause for the sudden lull in market. Inventories built up at the outbreak of war were discounted as a future influence, but heavy demand foreseen in many quarters after holiday quiet, has failed to appear.

Major development during month is reported plan for domestic production of cobalt oxide. Manufacturer plans production from African cobalt ore, processed domestically. Move stems from slow shipments from Belgium.

Price Situation Interesting

Pricewise, the market had an interesting month. Increased replacement costs in primary markets was given as clue to rise in technical gallic and tannic acid. Copper sulfate sagged when weakness first developed in metal market, but then held firm despite later drops in the metal. Other copper salts, booked on contract, remained steady. Barium nitrate, though down 1c, found no takers, with large quantities offered.

Other items to slip during the month included: antimony needle, off 2c, sodium antimoniate, off ½c, tin crystals, off 2c, tin oxide, off 1c, and tin tetrachloride, down 1¾c.

On the strong side, with gallic and tannic acid, were ammonium perchlorate, up 1c, copperas (l.c.l.), up 10c, and refined saltpeter, up 50c.

Chief trend during month was disposition to limit forward buying. Most sellers continued to ignore export purchasers to a large extent, though this picture may change due to entry of Anglo-French Purchasing Board into field who are expected to offer joint commitments for England and France.

Wide spreads between domestic and export prices in many items still prevail. Bichromates are practically unobtainable for export. Prices as high as 22c are mentioned in the trade as having been offered for spot lots for shipment abroad.

Important Price Changes

	Jan. 31	Dec. 31
ADVANCED		
Acid gallic, tech.	$0.75	$0.70
Acid tannic, tech.	.44	.40
Ammonium perchlorate	.17	.16
Copperas, l.c.l.	1.55	1.45
Potassium perchlorate	.10	.09½
Saltpeter, ref'd.	8.10	7.50
DECLINED		
Antimony needle	$0.18	$0.20
Barium nitrate	.09½	.10½
Copper sulfate	4.60	4.75
monohydrated	9.15	9.30
Sodium antimoniate	.14½	.15
Tin crystals	.36	.38
Tin oxide	.51	.52
Tin tetrachloride	.23	.24¾

Potassium chlorate is another item that is practically unobtainable.

To Study Markets

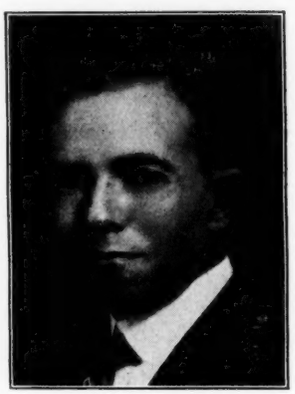
Pennsylvania Salt organizes research department to study markets for company products, recommend new products, launch their sales in line with company policies. Department will cooperate with both heavy chemical, specialty divisions, under direction of Richard L. Davies.

Thompson-Hayward Growth

Thompson-Hayward Chemical, enlarges general offices, Kansas City, adds warehouse space in that city, San Antonio and Tulsa, clears block of land at Des Moines for future development in company-wide expansion program. Home office capacious enough to hold sales meeting of 52 branch managers, salesmen, for first time.

Jacobs Re-Elected

The Chlorine Institute re-elects S. W. Jacobs, Electro Bleaching Gas, president at N. Y. City Chemists' Club meeting, Jan. 24. Also re-elected: E. C. Speiden, Isco division, Innis, Speiden, vice-president; Robert T. Baldwin, secretary-treasurer. R. W. Hooker, Hooker Electrochemical, Mr. Jacobs, Mr. Speiden elected directors.



S. W. JACOBS
Again heads Chlorine Institute.

Coal-Tar Chemicals

Toluol Production Still Behind Demand

Sellers Welcome Breathing Spell as Pressure For Immediate Shipments Eases—Phenol Production And Orders Now in Balance—Nitration Toluol at Premium—No Spot Material

DEMAND for coaltar chemicals last month tended to flatten out, with volume below that of '39 fourth quarter. New commitments, while under that high level, compare favorably with the like period last year. Notable exceptions to trend are toluol, with demand still outstripping production capacities, certain grades of creosols, and cresylic.

At month's end, phenol production had just come into balance with orders. However, most producers are continuing on full capacity schedules to clear up backlogs, as broader buying is foreseen shortly as a consequence of normal seasonal demand. Oddly enough, sellers welcomed the recession from peak demand as a breathing spell, as customers were reported lessening pressure for prompt shipments.

There is a great deal of export inquiry in market for certain coaltar solvents and nitration toluol. Some small offerings were available on the latter at premium levels.

No Price Changes

Pricewise there is nothing to report. Most contracts are now signed at figures reported here last month. Slowdown in demand is seen as far from close to developing any weak spots in the price structure.

Refined naphthalene market is beginning to pinch because of conditions surrounding the raw material. Xylol and benzol continue to move into consuming markets against contracts at a good rate. Spot material on most coaltars, however, is practically impossible to find.

Tonerde, Inc., Organized

Tonerde, Inc., 67 Broad st., N. Y. City, organized to import, export coal tar chemicals, ores. Officers: Dr. Albert Sundheimer, president; Theodore Katzenstein, vice-president; S. M. Schwartschild, secretary-treasurer. Company acts as U. S. representative, Tonerde Chemical Company, The Hague, Netherlands.

Highlights on Coal Tar

Some interesting highlights on coal tar are set forth in the February number of *Priorities*, house organ of Prior Chemical, N. Y. City. The derivatives of coal tar and some of the more important and more recent products obtained from them are briefly discussed and a point is made of the part played by the evolution of coal tar dyes in the development of the chemical industry. A thought provocative speculation has to do with the possibility of legislation at a future day prohibiting the use of coal as fuel.

Important Price Changes

ADVANCED

Jan. 31 Dec. 31

None

DECLINED

None

Dr. Merz Recovers

Dr. August Merz, Calco vice-president and president, Synthetic Organic Chemical Manufacturers' Assn. back at his desk after appendectomy.

Dyestuff Agency Formed

Saint-Denis, Kuhlmann, Saint-Clair Dyestuff Corp., 55 Vandam st., N. Y. City, organized as sales agency for French dyestuff producers. Officers: H. P. Rossiger, president-treasurer; Dr. A. Lang, vice-president; C. G. Becket, secretary.

Obituaries

Paul Hooker, 65, one of five brothers who developed Hooker Electrochemical Co., Niagara Falls, N. Y., died, following a heart attack.

After graduation from University of Rochester and special studies at M.I.T. he served as civil engineer with U. S. Army Engineering Corp from 1899 to 1901. Service as sanitary engineer in construction of waterworks at Harrisburg, Steelton, Pa., and Lynchburg, Va., won him post of assistant engineer investigating water works, sewerage for Pennsylvania State Health Dept. where he remained until 1917 when he joined his brothers in Hooker Electrochemical.

S. Dabney Crenshaw

S. Dabney Crenshaw, 86, one of the organizers and former vice-president, Virginia-Carolina Chemical, former president of Phosphate Products Corp. and many of its subsidiaries died Feb. 5, after a long illness. Mr. Crenshaw, who retired in 1935, had been active in the Southern chemical industry since 1876.

Other Deaths of the Month

Malcolm G. Sargent, 47, Sprout, Waldron New England district sales engineer, died after an operation at Quincy Hospital, Quincy, Mass. Born in Sargentville, Maine, Mr. Sargent was a life-long New Englander, joining Sprout, Waldon five years ago after resigning as partner of a mill supply firm.

Alexander Alexander, 70, board chairman, National Starch Products, in Miami Beach . . . Benjamin S. Buckmaster, 46, sales manager, Pfanstiehl Chemical, in Waukegan . . . Nathaniel T. Chapin, 50, vice-president, sales manager, Billings-Chapin, in Monrovia, Cal. . . . Arthur S. Key, 51, vice-president, Federal Chemical Company, in Louisville . . . John Newton Cheek, 72, cashier, Virginia-Carolina Chemical, in Greensboro, N. C. . . . Benjamin C. Blowney, 71, Cincinnati, manager, Geigy Co., in Milwaukee . . . George Grunthal, 69, MacLac Company executive, in High Point, N. C.

James C. D. Canne, 62, vice-president, Hollywood Chemical, in Los Angeles . . . Charles E. Sutton, Southwestern district manager, Merck, in N. Y. City . . . A. M. Loomis, Washington agricultural group representative, in Washington.

Chemist Unemployment

Nearly 600 unemployed industrial chemists registered with Chemist Advisory Council for information, contacts, or guidance, during '39. At year's end, approximately 20% reported they had obtained employment and figure would probably go higher if non-reporting registrants were checked, said Council's secretary, M. R. Bhagwat.

RUTGERS' DEAN READ

Heads Chemist Advisory Council.

Statistics were released concurrent with second annual meeting, Jan. 31, at N. Y. City's Chemists' Club, at which Dr. William T. Read, Dean, Rutgers Department of Chemistry became president, with Dr. Gustavus J. Esselen, Boston consulting chemical engineer, vice-president, Robert T. Baldwin, treasurer. Mr. Bhagwat was re-elected secretary.

Council was formed to bolster morale of unemployed chemists, assist them in their own efforts to uncover potential or existing positions where qualifications fit. More than 1,280 chemists from 45 states, bearing degrees from 192 educational institutions registered during past two years.

CHEMICAL SPECIALTY *News!*

Arsenate Standards Are Revised by D. of A.—"Black Witch" No Trademark—Insecticide Test Year Changed—News of Companies

New Department of Agriculture standards on arsenates deem lead arsenate in powdered form adulterated: "first, if it contains total arsenic equivalent to less than 31 per centum of arsenic oxide; second, if it contains arsenic in water-soluble forms equivalent to more than 50/100 per centum of arsenic oxide."

Calcium arsenate considered adulterated: "first, if it contains arsenic in combination with calcium, equivalent to less than 70 per centum of tricalcium arsenate; second, if it contains arsenic in water-soluble forms equivalent to more than 75/100 per centum of arsenic oxide."

Standards, contained in proposed amendment to insecticide act, requires net weight or volume shown on labels, provides increase in fines from $200 to $500 upon conviction for each offense under act subsequent to first offense.

Black Flag Protest Wins

Black Flag Company balks attempt of Ford Hopkins Co., to register "Black Witch" trademark for insecticide. Assistant Patent Commissioner Frazer ruled mark might be confused with "Black Flag" used by complainant.

Rust-Proof Patent Upheld

Parker Rust-Proofs' bonderizing process patent for rust proofing, upheld in U. S. District Court, Detroit. Court ruled American Chemical Paint infringed Parker patent awarding latter judgment covering profits derived under infringement; also damages to be determined by court later. Injunction prevents manufacture, use or sale of patented materials by American Chemical Paint, particularly in "spray granodine" processes.

Connolly Forms Company

Insecticide Corporation of America, Medina, N. Y., organized by Daniel E. Connolly, former executive New York State Insecticide Co., and others, with $300,000 capitalization. Deane Strickler, former sales manager, insecticide branch, Miller Chemical, is general manager. On managerial board: E. B. Pinkerton, vice-president, Miller Chemical and M. C. Morton, vice-president, Central Chemical.

Test Year Is Changed

N. A. I. D. M. changes Official Test Insecticide year to run from April 1 instead of Jan. 1, reprieving present official test labels carrying year end date. Reason: production, packaging, distributing convenience.

News of the Companies

Inter-Mountain Chemical, with temporary offices in Fordonia Bldg., Reno, Nev., organized to manufacture anti-freeze for automobiles. Officers: C. A. Gottschalk, president; H. H. Lehmker, secretary-treasurer.

Collins Chemical & Manufacturing, Framingham, plans to move plant to Millis, Mass. Wendell Collins, Millis, heads company, manufacturing rubber cement, chemicals for shoe, rubber industry.

Barton Manufacturing Co., St. Louis, enters into stipulation with Federal Trade Commission abandoning claims that "Dyanshine" polish causes shoes to retain original, new condition while being used; that it renders shoes impervious to water. Company agrees to drop claim that "Barton's White Glaze Polish" will not rub off shoes after application.

Pest Control Conference

Purdue Pest Control Conference emphasizes practical control methods, sources of infestation at fourth annual meet attended by 141 operators. High light was annual banquet with Purdue President, Dr. Edward C. Elliott as toastmaster, Entomology Chief J. J. Davis presiding.

Dr. C. L. Metcalf, Entomology head, University of Illinois, delivered principal address: "An Insect Looks at the Pest Control Operators." Other speakers, Walter S. McCloud, president, N.P.C.A., Leonard Goldman, and William O. Buettner.

Must Show Pyrethrins

Food and Drug Administration rules that after Sept. 1, labels on pyrethrum powder and products must show per cent. of pyrethrins present. Ruling quotes 1910 Insecticide Act as authority.

Phenol Coefficient Asked

Phenol coefficient, where applicable, would be required on disinfectant labels under an amendment to insecticide act suggested to Congress by F. & D. A. When present law was passed, phenol coefficient test was unknown.

Pest Control Conference at Purdue University was attended by 141 operators, most of whom are shown below. Prof. J. J. Davis presided.

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USI SOLVENT NEWS USI

Reg. U.S. Pat. Off.

February ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1940

Extensive Market Seen for DEREX In Cattle Sprays

U.S.I. Insecticide Activator Proves Exceptionally Effective

Greater efficacy of insecticidal sprays for cattle and other livestock is expected to result from the rapidly increasing use of DEREX, U.S.I.'s recently developed insecticide concentrate.

First introduced only a few months ago, DEREX has attained quick popularity among insecticide manufacturers because of the high efficiency which it makes possible at low cost.

Solvent Increases Activity

DEREX is a solution of derris root extractives in Dimethyl Carbobutoxy Dihydropyrone, a solvent developed by U.S.I., which possesses insecticidal properties of its own, and therefore, in addition to acting as a solvent, definitely increases the insecticidal activity of the dissolved substances.

DEREX is supplied by U.S.I. in two forms: one containing rotenone, the other rotenone-free, but having the same insecticidal strength.

U.S.I. will gladly furnish additional information on this unusual new insecticide activator.

DEREX is a U.S.I. product.

New Folder Describes Applications of Solox

Typical uses of Solox, U.S.I.'s proprietary solvent, in household, boat, and automobile applications, are described in a four-page folder which has just been issued. Included are helpful directions for the use of Solox in cleaning floors, metal articles, and windows; in conditioning fuel oil; in preventing settling of condensed moisture in fuel tanks; in thawing plugged drains; and in overcoming sticking engine valves.

Copies of this informative leaflet may be obtained by writing U.S.I.

Report High Yield of Wax With Mixture of Acetates

TULSA, Okla.—That wax-containing materials can be efficiently separated from petroleum stocks by a mixture of isopropyl and amyl acetates is claimed in a patent issued to two inventors here.

The method, it is stated, is a departure from previously used processes, which employed two solvents of radically different characteristics. The use of similar solvents, according to the inventors, gives excellent results, and is especially desirable for de-oiling petrolatum, which contains soft waxes undesirable in the finished product. The mixture of isopropyl and amyl acetates is said to display good selective action, holding the soft waxes in solution and producing a high yield of hard wax.

Amyl Acetate and Isopropyl Acetate are produced by U.S.I.

Ethyl Ether Finds New Uses In Industrial Solvents Field

U.S.I. Product Employed as Cleaner in White Shoe Industry, In Chemical Syntheses, and as Nitrocellulose Solvent With Alcohol

Development of new uses and expansion of established ones have greatly broadened the utility of ethyl ether as an industrial solvent of unusual properties.

Among the industries now using this U.S.I. product in large quantities is the white shoe industry, where the exceptional ability of ether to dissolve oils, fats, and greases makes it an excellent material for cleaning and spot removing. The manufacturers of hats and textiles also make wide use of ether for this purpose.

Other cleaning and degreasing applications include metal parts, machinery, electric motors, automobile brake bands, and plastics.

This solvent property of ethyl ether has been used to good advantage in many analytical procedures—for example, in the analyzing and testing of breadstuffs, dairy products, cocoa, flour, fats, oils, and soaps. A comparatively recent application is in the separation of extractives in wood. The procedure in this case is said to consist in subjecting the extractives to the successive action of steam, ether, alcohol and water. The ether serves as a solvent for the fats, fatty acids, phytosterol, resins, resin acids, and waxes.

A handy data table has been prepared, giving the blush resistance, boiling range, flash point, viscosity, water solubility, and dilution ratio with toluol and petroleum naphtha of more than 30 widely used solvents. Copies of this table may be obtained by writing U.S.I. Ask for Bulletin SP.

This article describes only a few of the many industrial applications of Ethyl Ether. A more comprehensive list, classified by industries, has been prepared for free distribution. Copies of this list may be obtained by writing U.S.I.

In Chemical Manufacture

Ether is finding many new applications in the manufacture of other chemicals. In addition to its use in the extraction of acetic acid from crude pyroligneous acid, it has established itself as a valuable tool in many forms of chemical synthesis. Its versatility in such applications can be illustrated by a few typical examples. It has been used for washing the product in a recently reported method for preparing esters of acrylic acid; in the preparation of neopentyl iodide and bromide; as an extracting agent in the preparation of allylmethylcarbinol; in making synthetic dye-

(*Continued on next page*)

Allied Trades Banquet To be Held Next Month

Big event next month is the 15th Annual Drug, Chemical, and Allied Trades Banquet, which will be under the sponsorship of the Drug, Chemical, and Allied Trades Section of the New York Board of Trade. Date is March 14; place is the Waldorf-Astoria, New York.

Reports on Paint Tests For Protection of Steel

Comparative studies of effectiveness of various types of paint in protecting steel structures against corrosion have been reported in *Verfkroniek*. Paints tested consisted of linseed oil, standoil, and linseed-tung standoil, pigmented with red lead, iron oxides, and mixtures of the two.

The tests indicated, it is said, that the protective value of red lead was best in linseed oil, intermediate in standoil, and poorest in linseed-tung standoil, while the order was reversed in the case of iron oxide.

It is also stated that the protection appeared to be proportional to film thickness, indicating the inadvisability of excessive thinning.

Ewing Galloway and Camera Guild.

The cleaning of hides in the leather industry and the making of films and emulsions for photographic purposes are two of the many applications which use Ethyl Ether extensively.

ADVERTISEMENT—*This entire page is a paid advertisement.*

February ★ **SOLVENT NEWS** ★ 1940

Greaseproofs Fabrics With Zein and Alcohol

LONDON, England—That fibrous bodies, such as paper, cloth, cardboard, and fiber board, can be greaseproofed by a solution of zein is set forth in a patent issued here.

A suitable solution, it is claimed, has the following proportions:

Zein	100 parts
Diethylene Glycol	20 parts
Ethyl Alcohol	250 parts

Ethyl Alcohol is produced by U.S.I.

Industrial Uses of Ether

(Continued from previous page)

stuffs and non-alcoholic vanilla.

Many of the largest applications for ethyl ether depend on the fact that a mixture of ethyl ether and ethyl alcohol is an excellent solvent for nitrocellulose. This fact is utilized in the manufacture of propellants, photographic emulsions, explosives, collodion, and adhesive and coating compositions containing nitrocellulose. In spite of its excellent solvent properties, a mixture of alcohol and ether is not ordinarily employed in the manufacture of nitrocellulose lacquers, because lacquers containing ether display a marked tendency to blushing during drying. This property, however, aids in formulating non-transparent bottle cap lacquers, it is claimed.

Used as Alcohol Denaturant

Ether is also used as a primer for gasoline motors, and as a denaturant for Specially Denatured Alcohol Formulas S.D. 13A, 19, and 32. These formulas naturally are extensively employed where the ability of a mixture of alcohol and ether to dissolve nitrocellulose is a basic consideration. S.D. 13A, for example, is authorized for use in manufacturing cellulose compound lacquers, cellulose plastics, adhesives, binders, and inks.

U.S.I. produces ethyl ether in both U.S.P. and Absolute A.C.S. grades. The Absolute grade, because of its high purity, is used chiefly for laboratory work, in research or production control. The U.S.P. grade is used for the majority of industrial applications.

U.S.I. welcomes inquiries on the use of ethyl ether in industrial applications.

Additional data on the use of Curbay X for coal conditioning have been prepared to supplement the information which appeared in the January issue of SOLVENT NEWS. A bulletin containing these data has been prepared for distribution, and copies of it may be obtained by writing U.S.I. Ask for Bulletin CX.

Want Faster Ski Speeds? Try This Grease Coating

NORTH NEWPORT, N. H.—Faster ski speeds for outdoor enthusiasts are promised by a new grease coating, on which a patent has been issued to an inventor here.

Composition of the coating, according to the patent, is:

1/2 ounce of celluloid
1/3 pint of acetone
1/6 pint of shellac
1/12 ounce of powdered graphite

Acetone is produced by U.S.I.

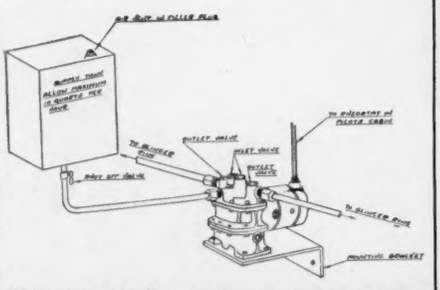
Equipment Maker Recommends Solox for Plane De-Icing

U.S.I.'s Solox has been selected by a manufacturer of anti-icing equipment as an excellent vehicle for the glycerine used in anti-icing of plane propellers.

"Continued research and experimentation," reports the manufacturer in his Service Bulletin, giving recommendations for installation of the equipment, "has resulted in the recommendation of the following solution:

85 parts Solox
15 parts C. P. Glycerine

"In order to assure proper operation of the propeller anti-icer pump, it is essential that the above solution be utilized."



This schematic diagram shows a typical propeller anti-icing installation for supplying a solution of Solox and glycerine to the slinger ring.

Describes Varnish Formula

A varnish said to be suitable for protecting the gelatin surface of a processed photographic film or plate has the following proportions:

Shellac	75 grams
Sandarac	75 grams
Castor oil	2 cc.
Absolute Alcohol	1 liter

Absolute Alcohol is produced by U.S.I.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A liquid cleaner is reported to remove hard encrusted inks of all colors from type and printing equipment. According to the manufacturer, it contains an inhibitor which tends to preserve metal surfaces, and is free of acid or injurious materials. **(No. 300)**

U S I

A floor wax of the water-emulsion type is waterproof after 20 minutes, it is reported. The maker recommends it for use on linoleum, terrazzo, wood, or concrete form. It is available in several colors. **(No. 301)**

U S I

"Alkali ice" can be removed from marble, tile, terrazzo, or concrete floors by a new cleaner, it is said. Cleaner is reported to be non-staining. After use of the cleaner, floor is reported to be absolutely neutral, with a pH of 7. **(No. 302)**

U S I

New resins of the modified polystyrene type are reported to be hard, tough, and elastic. The maker suggests their use in such fields as adhesives, plastic molding compounds, and surface coatings where contact with petroleum oils is necessary. The resins are not compatible with vegetable drying oils. **(No. 303)**

U S I

A brazing material in powder form is said to be suitable for brazing copper, brass, and bronze. It is packed in spouted cans, from which it may be fed to the joint. According to the manufacturer, it melts at about 1,400°F.; penetrates quickly to make sound joints; has an electrical conductivity in the finished joint of about 98% of rolled copper bar. **(No. 304)**

U S I

An addition agent for pickling baths is said to lower the surface tension of sulphuric or hydrochloric acid pickling solutions, and thus to result in savings of acid. It is also claimed that the acid pickle containing the addition agent will function as a cleaner. **(No. 305)**

U S I

A synthetic wax is said to have a melting point of 133-134°C., but to be less hard and brittle than most high-melting waxes. According to the manufacturer, it is insoluble in water, soluble hot in mineral spirits, turpentine, toluol, naphtha, and similar hydrocarbon solvents. **(No. 306)**

U S I

An alkaline cleaner is reported to be non-corrosive to tin, tin-plate, and aluminum. Maker states that it is a true alkaline cleaner, but contains a special agent that inhibits corrosion. It is said to contain no soap, fats, or oils, and to be perfectly soluble in hot or cold water. **(No. 307)**

U S I

A synthetic oil is said to replace chinawood oil in many instances in paints, varnishes, and printing inks. It is reported that tests indicate that gloss and drying properties are similar to chinawood oil, but that alkali resistance is somewhat lower. **(No. 308)**

U S I

A new finish is reported to combine wax and a synthetic resin lacquer in a single coating. It is said to be available in a wide range of colors. **(No. 309)**

U.S.I. INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND ST., N. Y. (U.S.I.) BRANCHES IN ALL PRINCIPAL CITIES

A SUBSIDIARY OF U. S. INDUSTRIAL ALCOHOL CO.

ALCOHOLS
Amyl Alcohol
Butyl Alcohol
Fusel Oil—Refined
Methanol

Ethyl Alcohol
Anhydrous
Absolute
C. P. 96%
Pure (190 proof)
Specially Denatured
Completely Denatured
U. S. I. (Denatured Alcohol Anti-freeze)
*Super Pyro Anti-freeze
*Solox Proprietary Solvent

***ANSOLS**
Ansol M
Ansol PR

ESTERS, ACETATES
Acetic Ether
Amyl Acetate
Butyl Acetate
Ethyl Acetate

ESTERS, ETHYL
*Diatol
Diethyl Carbonate
Diethyl Oxalate
Ethyl Chlorocarbonate
Ethyl Formate
Ethyl Lactate

*Registered Trade Mark

ESTERS, PHTHALATES
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate

OTHER ESTERS
Amyl Propionate
Butyl Propionate
Dibutyl Oxalate

INTERMEDIATES
Acetoacetanilid
Acetoacet-o-chloranilid
Acetoacet-o-toluidid
Ethyl Acetoacetate
Sodium Ethyl Oxalacetate

ETHERS
Ethyl Ether
Ethyl Ether Absolute—A.C.S.

OTHER PRODUCTS
Acetone, C.P.
Collodions
*Curbay Binders
*Curbay X (Powder)
Derex
Ethylene
Methyl Acetone
Nitrocellulose Solutions
Potash, Agricultural
*Vacatone
*Curbay B-G

Solvents

Interest High in Acetone for Export

Producers Report Buying Scaled Down From Fourth Quarter, But Shipments Remained Steady—Rubber Solvent In Demand—Alcohol Gathers Strength—Price Stability Seen

HEALTHY inquiry maintained a moderately active solvent market last month, although consumer commitments were being scaled down somewhat from the level of '39 fourth quarter. Export interest chiefly centered around acetone, although other lacquer items were in brisk demand. Sellers moved cautiously on foreign business, however, as domestic business continued moving well against contracts.

Call remained steady for rubber solvents at 9½c, with Akron rubber center prospects auguring well for this item during next month at least. Most other prices held firm despite light demand.

Spring buying stimulating the automobile industry is expected to have a salutary effect on the lacquer group. Based on present withdrawals, outlook is that business will jump back to pre-holiday level. Past month demand was in great enough quantity to support 1c rise in butyl alcohol. Alcohol diacetate was up 1½c, and butyl acetate 1c as the prices closed Jan. 31.

Only item on the soft side was lacquer diluent, which dropped fractionally both for the benzol and toluol types.

Alcohol gathered strength during the month, with production moving in good volume and consumers taking up offers promptly. At month's end there was no slackening in demand or sign of pending drop in consumption. Producers look for continued maintenance of prices at present level.

Ethyl Production Up

Ethyl alcohol production for the last half of 1939, from July 1 to December 31, amounted to 119,122,585 proof gallons, compared with 98,511,953 gallons during the same period in 1938. Alcohol withdrawn for denaturation amounted to 120,656,752 gallons during the same period as compared with 96,531,021 gallons for the same months in 1938.

Production of completely denatured alcohol in the last half of 1939 totaled 11,631,375 wine gallons, during the corresponding period in 1938, 14,063,701 gallons were produced. December production of ethyl alcohol was 22,080,109 proof gallons against 16,780,614 gallons in December 1938. 19,524,499 gallons were withdrawn during the month for denaturation.

"Petrobenzol" Name Changed

Anderson-Prichard changes name of "Petrobenzol," a by-product fraction of petroleum, to "Petrolene." New name avoids inference, present in old name, that product contains benzol.

Important Price Changes

	Jan. 31	Dec. 31
ADVANCED		
Alcohol, butyl, normal, tks.	$0.09	$0.08
drs.	.10	.09
Alcohol, diacetate, tech., tks.	.11	.09½
Butyl acetate, normal, tks.	.09	.08
DECLINED		
Lacquer diluent, benzol type	.07⅞	.08¼
toluol type	.07⅜	.07⅞

Talks On Synthetic Rubber

Howard E. Fritz, general manager, Koroseal Division, B. F. Goodrich, describes advantages of synthetic rubber before Dayton Association Purchasing Agents.

L. R. Moss Honored

Lowell R. Moss, Production Superintendent, Du Pont Alcohol Plant, Deepwater (N. J.), tendered testimonial dinner by 55 employees marking 25th anniversary with Du Pont. William F. Krug, plant manager, presented gold watch on behalf of employees.

LOWELL R. MOSS

Du Pont Deepwater employee honored for 25 years service.

Wood Co. Appointed

Standard Alcohol appoints Paul W. Wood Co. San Francisco agency for secondary solvents.

Branch Plant Opened

Pennsylvania Refining Co., Butler, Pa., opens Jersey City, N. J., branch plant with L. L. Long, newly appointed Atlantic Division manager in charge. Plant will handle company's entire line in bulk storage with tanks, blending, packaging machinery now installed.

Hill Joins Vanderbilt

George R. Hill, former development man, U. S. Rubber, Passaic, joins rubber research laboratories of R. T. Vanderbilt Co., East Norwalk, Conn.

Construction

Industrial Rayon to spend $4,000,000 in increasing capacity of Painesville plant more than 50 per cent., Hiram S. Rivitz, president, declared in his annual report to stockholders. Engineers are now readying plans, he said, and ground will be broken in six to eight weeks.

Union Carbide is spending several million dollars on addition to put Carbide and Carbon plant at South Charleston (W. Va.) among leading industrial alcohol producers. Company has 100 draftsmen busy on Port Arthur (Tex.) chemical plant project, including additions to present facilities.

General Chemical is building two branches at Menasha and Wisconsin Rapids. Units supply aluminum sulfate to paper makers.

Owens-Illinois buys 52 acre factory site at Waco (Tex.). Purchase was made in anticipation of fast developing market, with no immediate construction plans, said J. Preston Levis, vice-president and general manager.

Dewey & Almy Chemical, Cambridge (Mass.), receives bids on $125,000 factory, office building in Stickney (Ill.). Company now maintains Chicago warehouse.

First Texas Chemical building two story addition to its Dallas (Tex.) plant.

General Aniline to erect four story addition to Linden (N. J.) plant. One floor will house a laboratory, other space needed for storage.

Construction starts soon on $150,000 fourth fertilizer plant of Ohio Farm Bureau Cooperative Assn., at Columbus. New unit will step up fertilizer production to 150,000 tons a year.

Nuodex Move Defeated

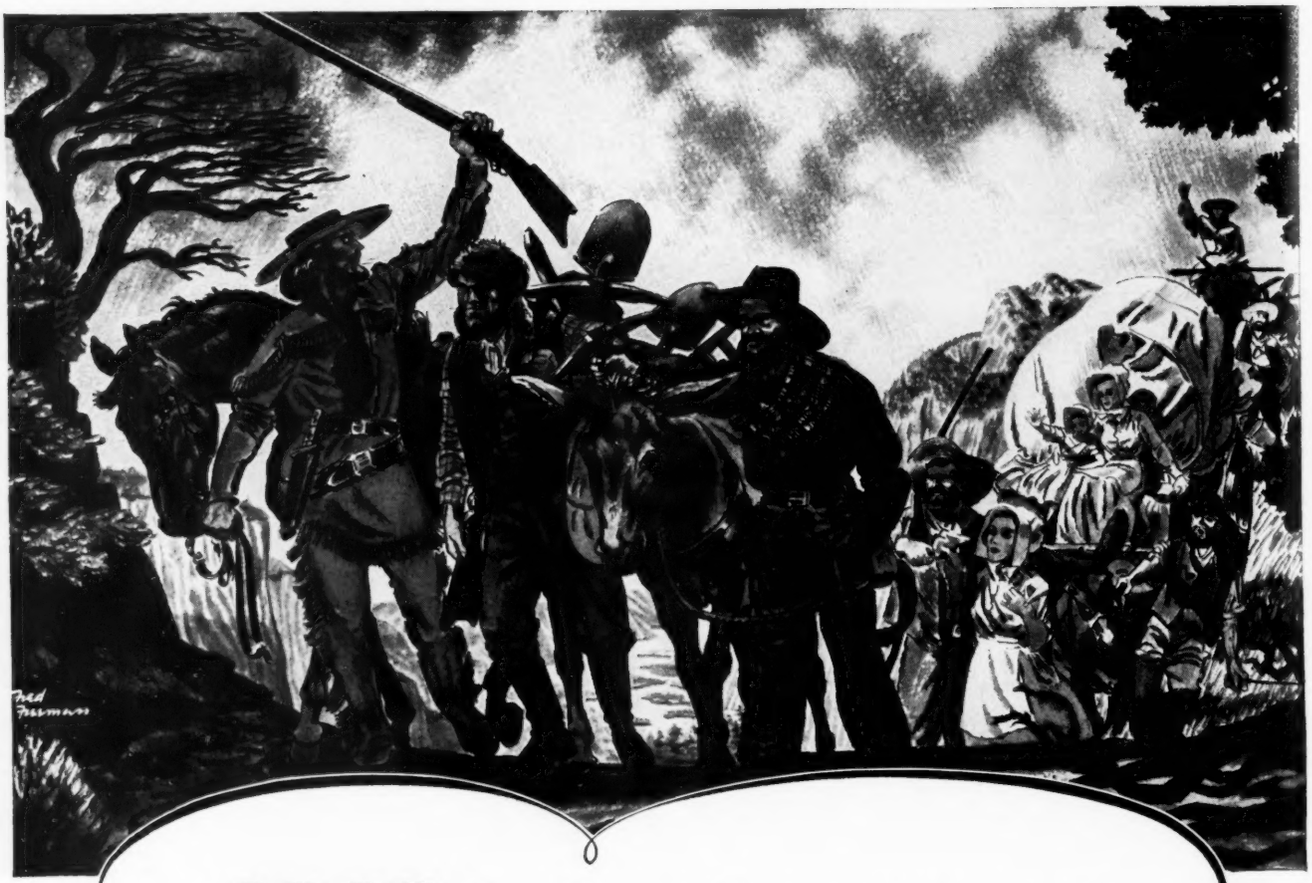
Nuodex Products, Elizabeth (N. J.), balked in expansion program when town Board of Works refused re-zoning on building it had contracted to purchase. Building is located in zone permitting only light industrial operations and taxpayer protest killed new classification.

Mineralia Petroleum Division

Mineralia Metal & Ore Corp. installs chemical, petroleum division at 149 Broadway, N. Y. City due to European demand. Company has branches in many European capitals.

1849

GOLD-SEEKERS RUSH TO CALIFORNIA



In 1849 *Chas. Pfizer & Co. started building something more precious than gold—a reputation for quality and dependability*

. . . . . ¶ Founded in 1849, Chas. Pfizer & Co. is now ninety years old. Few firms in this country can look back on so long a life. Fewer still can look back on so many years of outstanding service to humanity.

¶ When Chas. Pfizer & Co. was founded, the United States was still mainly agricultural—with vast areas in the West still sparsely inhabited by Indians, trappers and a few hardy pioneers. The chemical industry was still in its infancy. Chemicals were scarce, high-priced and of none too dependable quality. The first aim of Chas. Pfizer & Co. was and is to produce a dependable supply of chemicals of exceptionally high quality.

¶ Patient research and a rigid adherence to quality standards have won for Chas. Pfizer & Co. well-merited success. Today the Pfizer plant covers many acres, and Pfizer Chemicals serve an almost incredibly wide range of human needs.

CHAS. PFIZER & CO., INC.

81 MAIDEN LANE, NEW YORK, N. Y. • 444 GRAND AVE., CHICAGO

MANUFACTURING CHEMISTS SINCE 1849

Fine Chemicals

Mercurials Static As Quicksilver Advances

Seasonal Items Still Strong—Tartaric Acid Price Increases—Manufacturers See Higher Prices Based on Firm Primary Market—Present Export Demand is Not Upsetting Factor

QUICKSILVER, which seems to have hitched its price to a skyrocket, again features the month's news on fine chemicals. European sellers jumped the price $50 a flask, while the domestic price ran up $21.

Producers are moving cautiously with regard to mercurials, however. One major factor reported no unusual demand for the items, no change in price. But when the necessity comes to enter the primary market for replacement stocks, a change in price seems inevitable. This, though, is an eventuality which some domestic producers might find distasteful due to the possibility of competition from abroad.

Strongest feature in the market continues to be seasonal items. Shipments are moving steadily on items incidental to winter illnesses, and no slackening in demand is in sight until Spring.

Tartaric acid moved up 2c during the month. In fact, the trend of the market is higher, and it is felt in some quarters that the end is still not in sight. Raw material prices, it is pointed out, warrant maintenance of present level, despite dislike of producers for a runaway price list. Every effort is being exerted to keep materials out of speculative hands.

Month started bullish due to release of orders after completion of inventory period. Export demand seems to have stepped up, especially in those countries depending upon nations at war for supplies. But it still hasn't reached a point where foreign orders are an upsetting factor in the market.

Gallic acid, N.F., ran up a few cents over the month with plenty of company, including pyrogallic, U.S.P., the previously mentioned tartaric, cadmium metal, natural camphor, cream of tartar, menthol, lycopodium, rochelle salt, and seidlitz mixture. Only Spanish saffron declined.

Important Price Changes

	Jan. 31	Dec. 31
ADVANCED		
Acid gallic, N.F.	$0.92	$0.77
Acid pyrogallic, U.S.P.	1.55	1.45
resublimed	2.10	2.05
Acid tartaric	.35¼	.31¼
Cadmium metal	.80	.75
Camphor, natural	.83	.77
Cream of tartar	.28¼	.25¼
Menthol, nat.	3.75	3.65
Lycopodium	4.00	3.50
Quicksilver	180.00	150.00
Rochelle salt	.21¾	.19¾
Seidlitz mixture	.17⅝	.16½
DECLINED		
Saffron, Spanish	$35.00	$38.00

Personals

J. Harvey Gravell, late president American Chemical Paint, left bulk of $3,000,000 estate to 15 employees at Ambler, Pa., plant. Characteristic will declared he "started with nothing but a bucket, a stick, and an idea . . . it is my purpose to place control and ownership in the hands of my business associates and employees."

Charles P. Gulick, board chairman, National Oil Products, named vice-chairman, Industrial Practices Committee, National Association of Manufacturers. He is also the new president, Manufacturers Club, West Hudson County, N. J. Others elected by local Club were C. R. McBride, treasurer, and W. F. Jensen, Commissary. Both men are with Du Pont.

Dr. R. E. Hall, director, Hall Laboratories, Pittsburgh, in an illustrated address "Making Calcium In Water Behave," before Erie (Pa.) section of A.C.S. demonstrates properties of sodium metaphosphate.

Prof. Harry McCormack, director of chemical engineering, Armour, elected president, Illinois Engineering Council.

Col. William S. Weeks, secretary, Calco, and Dr. William Kirk, Du Pont Dye Works, are serving as board directors New Jersey Taxpayers Association

R. L. Ferguson, vice-president, Ricketson Mineral Color, named president, North Shore Country Club, Milwaukee.

Dr. C. A. Knauss discusses "Newer Developments in Synthetic Resins" at Brooklyn meeting of Paint and Varnish Exchange Club.

Dr. J. V. N. Dorr, president, Dorr Company, sails for Porto Rico in the *Borinquen*.

Irenee du Pont, vice-chairman of directorate, Du Pont, elected to Board of Managers, The Franklin Institute.

Dr. Colin Fink, Columbia, speaks before Virginia Blue Ridge section A. C. S., on "Chemistry and Art."

Ira Vanderwater, R. W. Greeff & Co., back at N. Y. City desk after a sojourn in Florida.

A. W. Scott, Pacific Coast sales director, National Lead, completes 25 years' service.

Marshall Dill, importer and manufacturer's agent, San Francisco, named '40 president Golden Gate International Exposition.

M. H. Collinson, Baker & Collinson, Detroit, father of twins—boy and a girl.

Fred Koch, Dow Chemical, is back from Florida. "Doc" Dorland left Feb. 1.

E. Rosendahl, Glyco, sails Feb. 7 on United Fruit tropical cruise returning Feb. 22.

Walter A. Noe has been appointed purchasing agent for Libbey Glass Company, Toledo, Ohio.

Newcomb K. Chaney, Research Director, United Gas Improvement, and Philadelphia Chairman, A. C. S., has been selected as one of N. A. M.'s "Modern Pioneers."

Sevier Bonnie, vice-president, Kentucky Color & Chemical, Louisville, elected president, Dry Color Manufacturers Association. His brother, Robert Bonnie, Kentucky Color & Chemical secretary, heads Associated Industries of Kentucky, for third time.

Now Neuberg Chemical Corp.

William Neuberg, Inc., 441 Lexington av., N. Y. City, incorporates as Neuberg Chemical Corporation. Management and personnel is unchanged.

Vitamin A Determinations

Pfaltz & Bauer experiments increase scope, application of Fluorophotometer to permit determinations of vitamins A, C, nicotinic acid, carotone, porphyrin. Previously, instrument was confined to vitamin B1, G.

Prior Chemical Appointed

Prior Chemical becomes sole selling agents for Great Lakes Chemical Corp., Filer City, Mich., makers of bromines, bromides, related products. Prior maintains selling offices in N. Y. City, Chicago.

Merck Reduces Accidents

Merck reduces plant accident rate 70 per cent. in six years, celebrates by banquetting safety units and those who made worthwhile suggestions in '39. Henry W. Johnstone, vice-president, charge operations, George W. Perkins, executive vice-president, spoke.

Address Changes

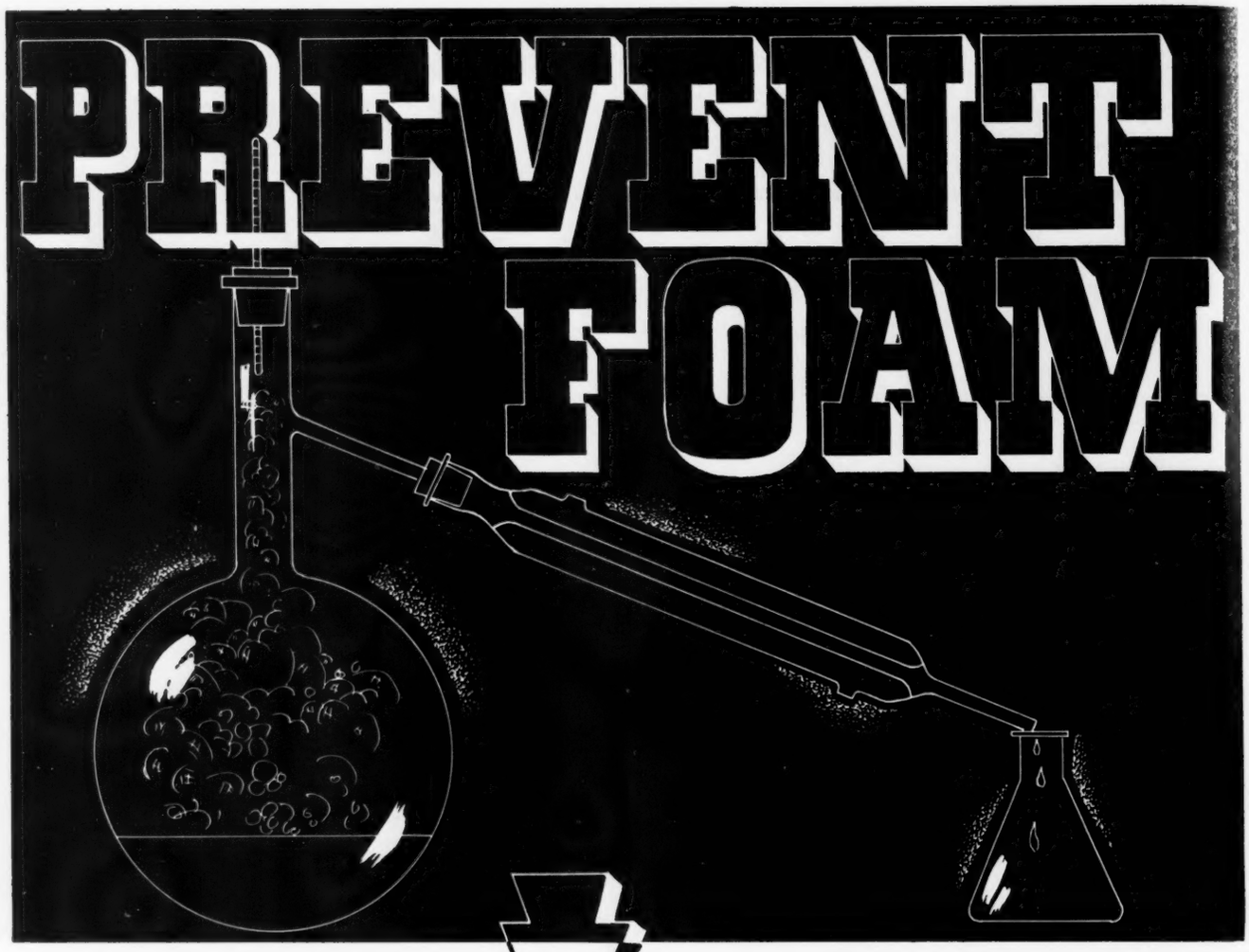
Young Aniline Works Paterson (N. J.), office now located at 50 East 13th st.

Paragon Testing Laboratories removes offices of fine organic and photographic divisions to 310 Main st., Orange, N. J.

Chemical Marketing Co., Inc., removes offices to 10 East 40 st., N. Y. City.

S. L. Abbott, Jr. Co., chemical distributor, moves into own building at 135 King st., San Francisco, Mar. 1, with Harold R. Brookman as new sales manager. Structure erected for Abbott contains warehouse, office.

PREVENT FOAM



BY ADSORPTION OF IMPURITIES WITH

NUCHAR

Foam has no place in concentration or distillation, and just as things are added to beer to give it foam-making properties, so it is often necessary to take similar things away from other bodies in order to eliminate the foam-making tendency.

Adsorption involves the movement of bodies to a surface and sometimes these bodies are very tenacious, sticky. In a distillation problem, if the liquid happens to contain bodies that move to the surface and are adsorbed there between the liquid and the vapor, and, if they are strong and tenacious, it will form a sticky film which will lead to foaming when the mixture is distilled or concentrated through evaporation. Inasmuch as the bodies that cause this trouble are adsorbable, they can be removed by prior treatment with NUCHAR Activated Carbon. Then, after they are removed, the liquid is free from these foam-making tendencies.

15th Annual Drug, Chemical and Allied Trades Banquet
March 14, 1940, Waldorf-Astoria Hotel, New York City.

INDUSTRIAL CHEMICAL SALES

DIVISION WEST VIRGINIA PULP AND PAPER COMPANY

NEW YORK	CHICAGO	PHILADELPHIA	CLEVELAND
230 Park Avenue	35 E. Wacker Drive	1322 Widener Bldg.	417 Schofield Bldg.

Raw Materials

Sumac Scores a Sensational Run-up

Consumers Showing Reserve—Seen Drawing on Inventories Built Up Before Prices Began to Firm—Turpentine Strong—Shellac and Carnauba Weaken Slightly—Tung Scarce

HIGHLIGHT of the raw materials market last month was the performance of sumac, both ground, and leaf, which scored a sensational run-up from $83 and $85 respectively to $98 a ton. But when that's been said, the month's activity can be summed up in one word—"quiet."

Throughout the period, buyers showed strong reserve. Consumers seemed to be drawing on inventories built up during last quarter when the price situation was more inviting. Scattered increases in shipments against contracts were evident as the month began, but the volume failed to hold up.

Two tight spots in the market, namely shellac and carnauba eased off somewhat in the period under review. Hazy cables from Brazil on the carnauba situation, many bearing contradictory price news seem to have been cleared up in the buyers' favor. Price slipped 2c to a 43c basis.

There was still sufficient interest in bone dry and garnet shellac to hold the prices firm, though superfine and T. N. reacted to the lethargy of the market and slipped 2c each.

Drying oils were spotty, and while chinawood gained half a cent, there were rumors of oil available below the market. This is a situation that isn't expected to exist for long, however, as prices at Hong Kong remained firm, and anticipated buying in February is likely to see chinawood on the march again.

Small receipts at primary markets coupled with meagre offerings by dealers kept turpentine on the rise for the greater part of the month. Closing price was 34c at Savannah, 40c in New York. Rosins were fairly inactive but price gains were scored particularly in the darker grades of gum rosin.

Turpentine Co-op Organized

Gum Turpentine Farmers' Co-operative Assn., organized at Waycross (Ga.), to process, store turpentine and rosin for farmers over a wide area. Construction starts this month on first plant with yearly capacity of 30,000 barrels turpentine, and over 100,000 barrels of rosin. Officers are: W. C. Rice, president, treasurer; G. M. Bazemore, vice-president; A. S. Bradley, secretary and legal counsel.

Gum Importers Name Skett

American Gum Importers' Assn., Brooklyn, appoints Anthony Skett research director, as group expands laboratory program into natural resins. Mr. Skett was with Sinclair Refining, Bakelite, and Hilo Varnish.

Important Price Changes

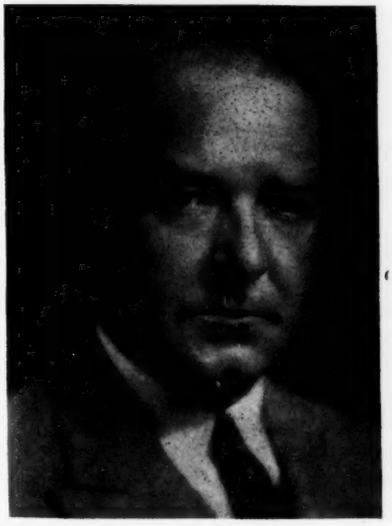
	Jan. 31	Dec. 31
ADVANCED		
Oil, chinawood, drs.	$0.27	$0.26½
tks.	.26	.25½
Oil, menhaden, crude	.35	.34
Oil sardine, crude, tks.	.37	.35
ref'd. alkali, tks.	.075	.073
Sumac, grd.	98.00	83.00
leaf	98.00	85.00
DECLINED		
Oil coconut, crude, tks.	$0.03¼	$0.03⅝
Oil, corn, crude, tks.	.06⅛	.06¼
Oil linseed, raw, tks.	.097	.102
Oil menhaden, ref'd. alkali, tks.	.069	.073
Oil soybean, crude, tks.	.06	.06½
Shellac superfine	.18	.20
T. N.	.17	.19
Wax carnauba, No. 3	.43	.45
Myrobalans, J1	32.00	33.50
J2	25.00	27.50
Wax bayberry	.25	.28
Wax Japan	.16	.17
Valonia beards	52.00	54.00
cups	38.00	39.00
Starch, potato	.06¼	.06¾
Tapioca flour	.02¾	.03

Plant Being Dismantled

Corn Products is closing and dismantling Edgewater (N. J.) plant, one of town's oldest industries. Storage and minor manufacturing facilities only will be left when operations are completed, said vice-president F. M. Sayre. Some of 400 employees will be transferred to Argo and Kansas City plants, others to relocate in metropolitan area industries.

Chemical Export Booklet

Chemical Division, Bureau of Foreign and Domestic Commerce is now distributing publication "World Trade Notes on Chemicals and Allied Products." Booklet offers survey of world chemical trade trends; outlines current regulations and restrictions on chemical exports.



JOHN H. BARTON

Resigns presidency of National Oil Products

Shellac Assn. Names Hicks

American Bleached Shellac Manufacturers' Assn., names Edward Hicks head of new Shellac Information Bureau, 70 Pine st., N. Y. City.

S.O.C.M.A. Files Protest

Synthetic Organic Chemical Manufacturers' Assn. files brief with House Ways and Means Committee Chairman, demanding Trade Agreement Act be permitted to expire on June 12. Brief proposed that Senate ratify all tariff reductions and flexible schedules to meet new conditions quickly.

Small Fair Exhibits

New York World's Fair for '40 introduces Displamor Division, providing moderate cost exhibits in major buildings for small companies, also offering spots for national advertisers to augment main displays. Exhibits will be three dimensional, many animated. Idea is borrowed from Chicago Fair where it was thoroughly tested.

700 For Drug Dinner

More than 700 reservations have already been received for March 14 annual dinner of Drug, Chemical and Allied Trades Section, N. Y. Board of Trade, Ray Schlotterer, secretary reports. Full committees are now organized and functioning.

Chrome Green Specifications

National Bureau of Standards considering new Federal specification on chrome green linseed oil paint calling for 25 per cent. precipitated chrome green with a substratum of barium sulfate and siliceous material.

Keady Elected by Sharples

G. J. Keady has been elected executive-vice-president, The Sharples Corp., Philadelphia . . . Dr. J. K. Stewart named technical service director, Tru-Coat Co., Detroit . . . A. C. Mueller made Midwestern representative, Varcum Chemical; headquarters in Chicago . . . H. P. Binder appointed assistant manager, Centrifugal Pump Division, Allis-Chalmers . . . R. A. Brewer named vice-president, MacManus, John & Adams, Detroit . . . Ralph Wilson made superintendent, A. E. Staley soybean processing plant, Richmond . . . Bruce Puffer resigns industrial alcohol sales managership for Commercial Solvents . . . Leon W. White named manager, Chemical Corporation, Pittsfield . . . W. B. Lawson resigns vice-presidency Harshaw Chemical.

Pigments and Fillers

Paint Makers Anticipate Heavy Spring Demand

Lead Pigments Decline—Rise In Quicksilver Sends English Vermilion Higher—Titanium Pigments and Lithopone Quoted Lower—Zinc Oxides Unchanged—Casein Reduced—

DESPITE forecast by coatings makers that '40 Spring will be busiest in 10 years, paint raw materials have as yet felt no boom. Price reductions featured market news during month, with pig-lead and lead oxides revised downward ¼c in the first price change on this item since last Sept. 6. Quotations on red lead, litharge, orange mineral were affected automatically

Only bullish item on the list is quicksilver vermilion which has risen steadily, keeping pace with the market on its raw material.

Notably weak throughout month was casein, with price drops in domestic as well as Argentine and New Zealand product. Price-cuts, however, seemed to leave buyers unaffected, with huge supplies entering U. S. from Argentine generally regarded as the reason.

At the month end, titanium pigment price reduction began to be felt, and market took on new interest. Also strong were zinc oxides, continuing in good demand at unchanged prices despite a break in slab zinc prices.

Stearates took on a strong tone as month played out. Contract deliveries were at a high level with prices up to 26c to 29c for zinc; 27c to 30c for magnesium; 23½c to 25½c for calcium; 21½c to 27c for aluminum. Palmitates were quoted 1½c below the stearates.

Important Price Changes

ADVANCED

	Jan. 31	Dec. 31
Vermilion, English	$2.76	$2.46

DECLINED

Casein, 20-30	$0.13	$0.16
80-100	.13½	.16½
Cellulose acetate	.34	.35
triacetate	.34	.35
Lead, red 95%	.07¾	.081
97%	.08	.0835
98%	.08¼	.086
Litharge	.06¾	.071
Lithopone, ord., bgs.	.036	.033¼
titanated	.05	.05¼
high-strength	.05	.05¼
Orange mineral	.10¾	.11
Titanium dioxide, chalk-resistant, bgs.	.15	.16
Titanium dioxide, calcium base	.05	.05¼

Following price reductions in lithopone and titanium dioxide, calcium base, each of which sagged ¼c, the chalk-resistant titanium dioxide was dropped a full cent. Glues were active during month with high demand, and toward month's close, one barytes producer, in the face of heavy export call, was withdrawing offerings on contract and quoting on day-to-day basis.

December Paint Sales Up

During December total sales of paint, varnish, lacquer, and fillers as reported by 680 establishments amounted to $26,-810,005 as compared with $21,281,326 for December 1938. Total sales for the year 1939 were $394,508,431, a substantial increase over the $374,682,114 for the year 1938.

Bakelite's "Coatings Cavalcade" attracted large audience at the Franklin Institute on Jan. 30. Top, A. J. Weith, Bakelite; center, A. K. Doolittle, Carbide; bottom, Dr. R. J. Moore, Bakelite.

AROCHEM 520

For LACQUERS: *General Utility, Sanding Sealers, Finishing Enamels*

For VARNISHES: *Industrial air drying and baking Enamel Vehicles, Tin-decorating Overprint*

Arochem 520 is a non-phenolic synthetic resin of unique structure, imparting:

TO LACQUERS: Permanence and paleness of color; low viscosity in high concentrations; high ethyl alcohol and plasticiser tolerance; excellent hardness and very rapid solvent release.

TO VARNISHES: Good bodying in substitute, as well as Chinawood, oils; unusual paleness and color retention in both air-drying and baking finishes.

•

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"S & W" ESTER GUM—*all types*
"AROCHEM"*—*modified types*
"AROPLAZ"*—*alkyds*
"AROFENE"*—*pure phenolics*
"ARODURE"*—*urea-alkyds*
NATURAL RESINS—*all standard grades*

*Registered U. S. Pat. Office

STROOCK & WITTENBERG CORPORATION
LINCOLN BUILDING, NEW YORK, N. Y.

Church & Dwight Co., Inc.

Established 1846

70 PINE STREET NEW YORK

Bicarbonate of Soda

Sal Soda

Monohydrate of Soda

Standard Quality

Agricultural Chemicals

Southern Farmers Defer New Crop Planting

British Decision to Curtail Virginia Tobacco Purchases in Favor of Turkish Sure to be Felt—Potash Producers Expanding Plants to Meet Increased Demand—Tag Sales Off

NEWS of the raw fertilizer materials was all on the slow side during the past month, with the exception of potash. Milder temperatures in the South have failed to warm up consumers to new planting. Crops still suffer from snow and cold that swept country two weeks ago.

Blizzard was felt worst in South Atlantic states, but the storm was wide enough to damage crops over an area as far west as Mississippi. Another slow note that creeps into this month's news is British decision to curtail imports of Virginia tobacco in favor of Turkish product. As tobacco crops take a high grade fertilizer, it is indeed bad news to producers.

Potash producers, on the other hand, are in the midst of a boom. One important factor saw shipments up 20 per cent. over 1938, and declared that expansion plans were on foot to cope with a further expected rise in demand when German and French stocks in this country have been wiped out. As in most quarters, however, expansion plans are being carefully weighed, the lesson of the last war boom seeming to have stuck. No price rise is seen in market until June, unless railroad tariffs take a step up, in which case shippers would have to equalize.

There was some slight pick up in sulfate of ammonia and nitrate of soda shipments which kept market steady at month's end. Cottonseed meal, however, which had held out valiantly during most of the month, gave up to the weather and the price dropped as the period played out. Bone materials continued a bright spot for sellers, but blood and tankage remained soft and slid a bit more during the period under review.

Decline in Tag Sales

January tag sales in 17 states represented 428,643 tons, according to reports by state control officials to the National Fertilizer Association. The total was 5% less than a year ago and 7% less than two years ago.

Total sales in the first seven months of the current fiscal year, from July through January, were moderately larger than in the corresponding period of 1938-1939 and were also very slightly larger than two years ago. Total tonnage was, in fact, the largest for any corresponding period since the data became available. With seven of the twelve southern states reporting smaller January sales than a year earlier, the area as a whole registered a 13% decline. The greatest declines were in the Carolinas. Mississippi sales were unusually large for the month, and smaller increases occurred in Arkansas, Florida, Texas, and Louisiana. The outstanding development in the midwestern region was the abnormally large increase in sales in Indiana. Total sales in the midwest in the July-January period were 21% above last year but were somewhat less than two years ago.

Important Price Changes

	Jan. 31	Dec. 31
ADVANCED		
Bone, steamed, 1¼ and 60%, imp.	$34.50	$34.00
DECLINED		
Blood, dried, N. Y.	$3.35	$3.90
Chicago	3.50	3.90
imported	3.30	3.45
Nitrogenous material, imp.	2.60	2.85
Western, wks.	2.00	2.25
Tankage, ungrd., N. Y.	3.25	3.75
imported	3.50	3.80

Superphosphate Production

According to reports of acidulators to The National Fertilizer Association, superphosphate production in 1939 was 9% larger than in 1938. It was 14% less than in the peak recovery year of 1937 but with that exception the 1939 output was the largest in the last ten years. On the basis of the total production reported to the N. F. A., it seems likely that total superphosphate production in 1939, including output of all producers, was about 4,200,000 equivalent tons of 16% superphosphate.

Aggregate shipments in 1939 by the reporting acidulators exceeded 1938 by 7%, with increases of 10% in the North and 4% in the South.

Nitrogen Statistics Omitted

British Sulphate of Ammonia Federation '38-39 annual report omits world nitrogen industry statistics. No date set for resumption of well read statistical surveys.

Pioneer Potash Formed

Pioneer Potash Corp., 44 Whitehall st., N. Y. City, organized to handle imported potash salts, with H. H. Hollesen, president and treasurer. Sales branch is to be maintained at Norfolk, agricultural and scientific branches at San Juan, P. R., and Havana. Other officers: Arthur Mehl, H. W. Schmitz, Werner Duehrssen, vice-presidents, latter in charge at Norfolk. Roland Payne covers northeastern territory with Hamden, Conn., headquarters; Kurt Duehrssen, Middle Atlantic territory, headquarters in Baltimore.

Important

As far as we know the 13-gal. carboy shown in R. W. Lahey's article "Bulk Packaging for Export" on page 23 of the January issue has not been used commercially yet. Container is still in experimental stage. Author has called to our attention that caption should have stated this.

Morrison Heads Branch

Kenneth D. Morrison will head new branch, French Potash, at 1801 First National Bank Bldg., Baltimore. Office will serve territory from No. Carolina to Maine.

G. J. Callister Resigns

George J. Callister resigns as vice-president, secretary, American Potash Institute Jan. 31. He returns to Canada for civil duty in connection with prosecution of war.

Dr. Kilgore Gets Award

Dr. B. W. Kilgore, North Carolina State Chemist, received Distinguished Service Award from American Farm Bureau Federation, for outstanding service to American agriculture during 1939.

Brand Leads Discussion

Charles J. Brand, National Fertilizer Assn. secretary, led the recent round-table discussion: "Farm Income and Production Control" at N. Y. City Industrial Conference Board session.

U. S. Phosphate Probe

Extension of joint congressional investigation into U. S. phosphate resources asked by Senator Claude Pepper, Representative J. Hardin Peterson, chairman and vice-chairman of committee. Special session blocked field investigations, hearings last year, report states in asking continuance to Jan. 15, 1941.

Herty Memorial Project

Late Dr. Charles H. Herty, eulogized in recent "March of Time" film as father of pulp paper industry of the South, will be honored with striking memorial museum at Waycross, Ga. Fund is being raised through local committee, for project to be known as Herty Forest Institute, housing permanent exhibits on naval stores industry, paper mills, lumber industry, library and art gallery.

Within the past month two Texas dailies came off the presses printed on Southern-pine paper, product of the Southland Paper Mills, Lufkin, Tex. Southland Paper's present output is estimated at 50,000 tons annually compared with the 3,000,000-ton total U. S. consumption.

Polystyrene Reduced

Monsanto's Plastics Division, Springfield, Mass., reduces price on polystyrene plastic molding materials, effective Feb. 7. Reduction lops five cents a pound off clear molding compound price, four cents off pound price on colored molding material.

Personnel

Earl F. Clark has been appointed as manager of the heavy chemical department of Cowles Detergent, with headquarters in Cleveland. Mr. Clark was

EARL F. CLARK

Now sales manager of Cowles heavy chemicals

with the Standard Silicate Division of Diamond Alkali for many years, and has been associated with Cowles as a representative of the laundry department in Western New England for several months. He succeeds Ralph C. Hughes, who resigned to take a position with Hooker Electrochemical, as New England representative of that firm.

Others in New Positions

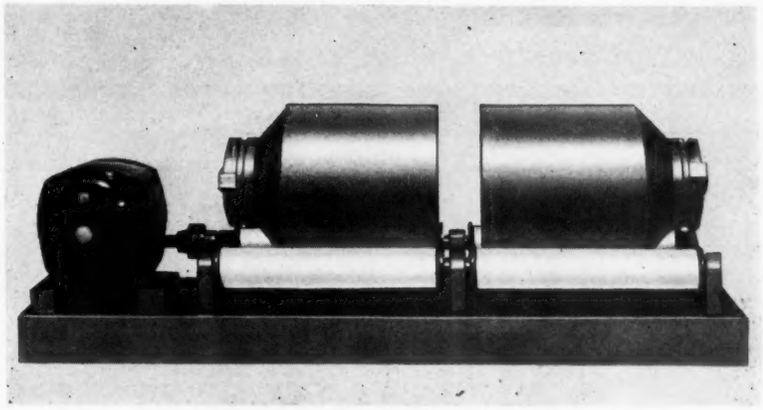
R. P. Bergen and H. M. Warren named assistant sales managers, National Carbon . . . Robert L. Bailey, formerly with Charles Dallas Reach, Newark agency, joins Du Pont sales staff, Arlington, N. J. . . . Harris G. Nelson, former head Milwaukee linseed division, transferred to Pittsburgh headquarters of Pittsburgh Plate Glass . . . Wyatt A. Miller becomes general plant superintendent, Sherwin-Williams, Chicago, succeeding W. S. Stevens who takes over management of Pigment Products Division; other appointments: Fred H. Lang, lacquer plant superintendent, Henry B. Einbecker, paint manufacturing superintendent, Dr. R. F. Schneider, resin and varnish superintendent . . . George W. Plaisted named vice-president, general sales manager, The Austin Company; A. E. Phelps becomes general purchasing agent . . . Ed. C. Shea named Pacific Coast, Hawaii representative for Savogran Company, Boston . . . James J. Jones, staff Paul W. Wood sales agency, San Francisco.

Ray C. Schlotterer, secretary, Chemical Section, N. Y. Board of Trade, named executive secretary, Federal Wholesale Druggists' Association . . . In executive reorganization, I. P. Thomas & Son names James S. Coale, president; Raymond R. Hall, vice-president, charge manufacturing; I. Preston Thomas, vice-president, charge of sales; S. Robinson Coale, treasurer; Heulings Lippincott, secretary; Walter C. George, comptroller . . . Arthur E. Ury appointed assistant to merchandising manager, Owens-Illinois; Walter D. Plummer takes over Ury's former advertising duties . . . Sidney D. Williams named vice-president, charge of sales, Copperweld Steel division, Warren, Ohio . . . E. P. Williams elected vice-president Prescott Paint, directing Pres-Kote sales . . . Dr. C. H. Kunsman made Chief, Physiochemical, Analytical Division, D. of A. regional research laboratory, Albany, Cal.

Iver W. Fallstrom named development, application director, Arnold, Hoffman & Co., Providence . . . Anthony Skett appointed research director, American Gum Importers Assn. . . . Richard L. Davies made manager, Market Research Department, Pennsylvania Salt . . . Charles N. Hollwedel joins sales staff, Kingston Chemical . . . Claude T. Brown made vice-president charge of sales, Federal Chemical, succeeding late Arthur S. Key . . . A. C. Eide appointed manager, pigment division, American Zinc, Lead & Smelting.

L. R. Westbrook, former assistant director Cleveland experimental laboratory, Grasselli Chemicals Dept., named manager Du Pont electroplating division . . . J. S. Keene elected president, general manager, First Texas Chemical Manufacturing Company, Dallas. Other officers: B. B. Johnston and V. M. Payne, vice-presidents; F. O. Burns, secretary-treasurer.

"ROLLER-TYPE" JAR MILLS
ARE SAFER TO HANDLE, EASIER TO USE AND SAVE YOU MONEY



"ROLLER-TYPE" JAR MILL (2-Jar Size)

Compare the amazingly low price of our "Roller-Type" Jar Mills with the usual type of Jar Mill. See how much more economical they are, size for size, how much easier and safer they are to use, how sturdy and rugged their construction. NOTE THE JARS REQUIRE NO CUMBERSOME CLAMPING INTO FRAME OR HOUSING—JUST SETTING THE JARS ON THE REVOLVING RUBBER-COVERED ROLLERS—nothing more. Standard sizes accommodate one, two, three or four "Loxeal" Jars, either of the 1, 1½ or 2 Gal. sizes. Larger sizes to order.

Write today for Bulletin No. 259 which describes and illustrates our "Roller-Type" Jar Mills, "U. S. Standard" Jar Mills, Ball Mills, Mill Jars, Steel Jacketed Porcelain Grinding Jars and "Loxeal" Mill Jars. This bulletin has just been issued.

THE U. S. STONEWARE CO.

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~Announcement~

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NEUBERG CHEMICAL CORPORATION

The management and personnel of our organization remain unchanged and our business will be conducted along the same lines as heretofore, providing a specialized service in the buying and selling of chemicals.

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TARTARIC ACID • CREAM OF TARTAR • ROCHELLE SALT • CITRIC ACID
SAPONIN • ACETIC ANHYDRIDE • ETHYLENE DIAMINE • LECITHIN
SODIUM PERBORATE

We invite inquiries for the above chemicals. We will also welcome inquiries from producers of chemicals or chemical by-products who are interested in increasing distribution in the chemical and allied industries.

Sodium Acetate users prefer

"SODACET"

(Trade Mark)

Sodium Acetate Special 90%

Pound for pound, "SODACET" contains 50% more actual Sodium Acetate than the commercial grade.

Write for sample and further information

NIACET CHEMICALS CORPORATION
NIAGARA FALLS, N. Y.

PRICES CURRENT

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f.o.b. works are specified as such. Import chemicals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1939 Average $1.24 - Jan. 1939 $1.25 - January 1940 $1.17

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Acetaldehyde, drs, c-l, wks	lb.	...	.11	...	.11	.10	.14
Acetaldol, 95%, 50 gal drs wks	lb.	.21	.25	.21	.25	.21	.25
Acetamide, tech, lcl, kgs	lb.	.28	.50	.28	.50	.28	.50
Acetanilid, tech, 150 lb bbls	lb.	...	.22	...	.22	.22	.29
Acetic Anhydride, drs, f.o.b. wks, frt all'd	lb.	.10½	.11	.10½	.11	.10½	.11
Acetin, tech, drs	lb.	...	.33	...	.33	...	.33
Acetone, tks, f.o.b. wks, frt all'd	lb.	...	.05¾	...	.05¾	.04¼	.06
drs, c-l, f.o.b. wks, frt all'd'	lb.	...	.07¼	...	.07¼	.05¾	.07¼
Acetyl chloride, 100 lb cbys	lb.	.55	.68	.55	.68	.55	.68
ACIDS							
Abietic, kgs, bbls	lb.	.08¾	.09	.08¾	.09	.08¾	.09
Acetic, 28%, 400 lb bbls, c-l, wks	100 lbs.	...	2.23	...	2.23	...	2.23
glacial, bbls, c-l, wks	100 lbs.	...	7.62	...	7.62	...	7.62
glacial, USP bbls, c-l, wks,	100 lbs.	...	10.25	...	10.25	...	10.25
Acetylsalicylic, USP, 225 lb bbls	lb.	...	.40	...	.40	.40	.50
Adipic, kgs, bbls	lb.	...	.72	...	.72	...	.72
Anthranilic, ref'd, bbls	lb.	1.15	1.20	1.15	1.20	1.15	1.20
tech bbls	lb.	...	.75	...	.75	...	.75
Ascorbic, bot	oz.	2.75	3.00	2.75	3.00	2.75	3.25
Battery, cbys, wks	100 lbs.	1.60	2.55	1.60	2.55	1.60	2.55
Benzoic tech, 100 lb kgs	lb.	.43	.47	.43	.47	.43	.47
USP, 100 lb kgs	lb.	.54	.59	.54	.59	.54	.59
Boric, tech, gran, 80 tons, bgs, delv	ton *a*	...	96.00	...	96.00	...	96.00
Broenner's, bbls	lb.	...	1.11	...	1.11	...	1.11
Butyric, edible, c-l, wks, cbys	lb.	1.20	1.30	1.20	1.30	1.20	1.30
synthetic, c-l, drs, wks	lb.	...	.22	...	.22	...	.22
wks, lcl	lb.	...	.23	...	.23	...	.23
tks, wks	lb.	...	.21	...	.21	...	.21
Camphoric, drs	lb.	5.50	5.70	5.50	5.70	5.50	5.70
Caproic, normal, drs	lb.	...	.35	...	.35	...	.35
Chicago, bbls	lb.	...	2.10	...	2.10	...	2.10
Chlorosulfonic, 1500 lb drs, wks	lb.	.03½	.05	.03½	.05	.03½	.05
Chromic, 99¾%, drs, delv	lb.	.15¼	.17¼	.15¼	.17¼	.15¼	.17¼
Citric, USP, crys, 230 lb bbls	lb. *b*	.20	.21½	.20	.21½	.20	.22½
anhyd, gran bbls	lb *b*	...	.23	...	.23	.23	.25
Cleve's, 250 lb bbls	lb.	...	.57	...	.57	...	.57
Cresylic, 99%, straw, HB, drs, wks, frt equal	gal.	.68	.70	.68	.70	.49	.70
99%, straw, LB, drs, wks, frt equal	gal.	.68	.75	.68	.75	.55	.75
resin grade, drs, wks, frt equal	lb.	.08¾	.09¾	.08¾	.09¾	.08¼	.09¾
Crotonic, bbls, delv	lb.	.21	.50	.21	.50	.21	.50
Formic, tech, 140 lb drs	lb.	.10½	.11½	.10½	.11½	.10½	.11½
Fumaric, bbls	lb.	...	.75	...	.75	...	.75
Fuming, see Sulfuric (Oleum)							
Gallic, tech, bbls	lb.	.75	.80	.75	.80	.70	.73
USP, bbls	lb.	.92	.95	.92	.95	.77	.81
Gamma, 225 lb bbls, wks	lb.	...	.85	...	.85	...	.85
H, 225 lb bbls, wks	lb.	...	.45	...	.45	.50	.55
Hydriodic, USP, 47%	lb.	...	2.30	...	2.30	...	2.30
Hydrobromic, 34% conct 155 lb cbys, wks	lb.	.42	.44	.42	.44	.42	.44
Hydrochloric, see muriatic							
Hydrocyanic, cyl, wks	lb.	.80	1.00	.80	1.00	.80	1.30
Hydrofluoric, 30%, 400 lb bbls, wks	lb.	.06	.06½	.06	.06½	.06	.07½
Hydrofluosilicic, 35%, 400 bbls, wks	lb.	.09	.09½	.09	.09½	.09	.09½
Lactic, 22%, dark, 500 lb bbls	lb.	.02½	.02¾	.02½	.02¾	.02½	.02¾
22%, light ref'd, bbls	lb.	.03½	.03¾	.03½	.03¾	.03½	.03¾
44%, light, 500 lb bbls	lb.	.05½	.05¾	.05½	.05¾	.05½	.05¾
44%, dark, 500 lb bbls	lb.	.06½	.06¾	.06½	.06¾	.06½	.06¾
50%, water white, 500 lb bbls	lb.	.10½	.11½	.10½	.11½	.10½	.11½
USP X, 85%, cbys	lb.	.42	.45	.42	.45	.42	.45
Lauric, drs	lb.	.14	.14½	.14	.14½	.11¾	.12¼
Laurent's, 250 lb bbls	lb.	.45	.46	.45	.46	.45	.46
Levulinic, 5 lb bot wks	lb.	...	2.00	...	2.00	...	2.00
Linoleic, bbls	lb.	...	.20	...	.20	...	.20
Maleic, powd, kgs	lb.	.30	.40	.30	.40	.30	.40
Malic, powd, kgs	lb.	...	.47	...	.47	.45	.60
Metanillic, 250 lb bbls	lb.	.60	.65	.60	.65	.60	.65
Mixed, tks, wks	N unit	.06½	.07¼	.06½	.07¼	.06½	.07¼
	S unit	.008	.009	.008	.009	.008	.009
Monochloracetic, tech, bbls	lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls	lb.	1.50	1.60	1.50	1.60	1.50	1.60
Muriatic, 18°, 120 lb cbys, c-l, wks	100 lb.	...	1.50	...	1.50	...	1.50
tks, wks	100 lb.	...	1.00	...	1.00	...	1.00
20°, cbys, c-l, wks	100 lb.	...	1.75	...	1.75	...	1.75
tks, wks	100 lb.	...	1.10	...	1.10	...	1.10
22°, c-l, cbys, wks	100 lb.	...	2.25	...	2.25	...	2.25
tks, wks	100 lb.	...	1.60	...	1.60	...	1.60
CP, cbys	lb.	.06½	.07⅛	.06½	.07⅛	.06½	.07⅛
N & W, 250 lb bbls	lb.	.85	.87	.85	.87	.85	.87
Naphthenic, 240-280 s.v., drs	lb.	.14	nom.	.14	nom.	.10	.14
Naphthionic, tech, 250 lb bbls	lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys, c-l, wks	100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks	100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks	100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks	100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv	lb.	.11½	.12½	.11½	.12½	11½	.12½
Oxalic, 300 lb bbls, wks, or N Y	lb.	.10¾	.12	.10¾	.12	.10¾	.12
Phosphoric, 85%, USP, cbys	lb.	.12	.14	.12	.14	.12	.14
50%, acid, c-l, drs, wks	lb.	.06	.08	.06	.08	.06	.08
75%, acid, c-l, drs, wks	lb.	...	.07½	...	.07½	...	.07½
Picramic, 300 lb bbls, wks	lb.	.65	.70	.65	.70	.65	.70
Picric, kgs, wks	lb.	.35	.40	.35	.40	.35	.40
Propionic, 98% wks, drs	lb.	...	.25	...	.25	...	.22
80%	lb.	...	.20	...	.20	.16	.17½
Pyrogallic, tech, lump, pwd, bbls	lb.	...	1.05	...	1.05	1.45	1.63
cryst, USP	lb.	1.55	2.10	1.55	2.10	1.55	2.10
Ricinoleic, bbls	lb.	.27	.33	.27	.33	...	.35
tech, bbls	lb.	...	.13	...	.13	...	.13
Salicylic, tech, 125 lb bbls, wks	lb.	...	.33	...	.33	...	.33
USP, bbls	lb.	.35	.40	.35	.40	.35	.40
Sebacic, tech, drs, wks	lb.	no prices		no prices		...	
Succinic, bbls	lb.	...	.75	...	.75	...	.75
Sulfanilic, 250 lb bbls, wks	lb.	.17	.18	.17	.18	.17	.18
Sulfuric, 60°, tks, wks	ton	...	13.00	...	13.00	...	13.00
c-l, cbys, wks	100 lb.	...	1.25	...	1.25	...	1.25
66°, tks, wks	ton	...	16.50	...	16.50	...	16.50
c-l, cbys, wks	100 lb.	...	1.50	...	1.50	...	1.50
CP, cbys, wks	lb.	.06½	.07½	.06½	.07½	.06½	.07½
Fuming (Oleum) 20% tks, wks	ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls	lb.	.44	.46	.44	.46	.40	.47
Tartaric, USP, gran, powd, 300 lb bbls	lb.	.35¼	.35¾	.35¼	.35¾	.27½	.31¼
Tobias, 250 lb bbls	lb.	.55	.60	.55	.60	.55	.67
Trichloroacetic bottles	lb.	2.00	2.50	2.00	2.50	2.00	2.50
kgs	lb	...	1.75	...	1.75	...	1.75
Tungstic, tech, bbls	lb.	no prices		no prices		1.70	1.80
Vanadic, drs, wks	lb.	no prices		no prices		1.10	1.20
Albumen, light flake, 225 lb. bbls	lb.	.55	.62	.55	.62	.52	.68
dark, bbls	lb.	.13	.18	.13	.18	.13	.18
egg, edible	lb.	.60	.62	.60	.62	.58	.78
ALCOHOLS							
Alcohol, Amyl (from Pentane) tks, delv	lb.	...	.10¼	...	.101	...	.101
c-l, drs, delv	lb.	...	.111	...	.111	...	.111
lcl, drs, delv	lb.	...	.121	...	.121	...	.121
Amyl, secondary, tks, delv	lb.	...	.08½	...	.08½	...	.08½
drs, c-l., delv E of Rockies	lb.	...	.09½	...	09½	...	.09½
Benzyl, cans	lb.	.68	1.00	.68	1.00	.68	1.00
Butyl, normal, tks, f.o.b. wks, frt all'd	lb. *d*	...	.09	...	.09	.07	.09
c-l, drs, f.o.b. wks, frt all'd	lb. *d*	...	.10	...	.10	.08	.10
Butyl, secondary, tks, delv	lb. *d*	...	.06½	...	.06½	.05½	.06½
c-l, drs, delv	lb. *d*	...	.07½	...	.07½	.06½	.07½
Capryl, drs, tech, wks	lb.	...	.85	...	.85	...	.85
Cinnamic, bottles	lb.	2.00	2.50	2.00	2.50	2.00	2.50
Denatured, CD, 14, c-l drs, wks	gal. *e*	.31½	.36½	.31½	.36½	.27½	.36½
tks, East, wks	gal.	...	.25½	...	.25½	.21½	.25½
Western schedule, c-l, drs, wks	gal. *e*	...	.34½	...	.34½	.34½	.37
c-l, drs, wks	gal. *e*	...	.21½	...	.21½	.19½	.22
Denatured, SD, No. 1, tks,		...	.28½	...	.28½	.25½	.28½

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls.; *y* Price given is per gal.

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

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TAR ACID OILS Frozen crystal free at 0°C.—good emulsion-forming properties—low benzophenol content—appropriate for low to high coefficiencies with tar acid contents as required.

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Tanks and Tank Work . . . Removal and Recovery Apparatus . . . Coal Tar Roofing Materials . . . Waterproofing and Dampproofing Materials . . . Tarmac Road Tar Materials . . . Bituminous Base Paints . . . Coal . . . Coke . . . Fast's Self-aligning Couplings . . . Piston Rings . . . Pressure-treated Lumber

KOPPERS COMPANY. PITTSBURGH, PA.

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Alcohols (continued):						
Diacetone, pure, c-l, drs, delv	lb. *f*	...	.12	...	.12	.09	.12
tech, contract, drs, c-l, delv	lb.	...	.11½	...	.11½	.08½	.11½
Ethyl, 190 proof, molasses, tks	gal. *g*	...	4.48	...	4.48	4.46	4.48½
c-l, drs	gal. *g*	...	4.54	...	4.54	4.49	4.54½
c-l, bbls	gal. *g*	...	4.55	...	4.55	4.53	4.55½
Furfuryl, tech, 500 lb drs	lb.	.25	.35	.25	.35	.25	.35
Hexyl, secondary tks, delv	lb.	...	.12	...	.12	...	.12
c-l, drs, delv	lb.	...	.13	...	.13	...	.13
Normal, drs, wks	lb.	3.25	3.50	3.25	3.50	3.25	3.50
Isoamyl, prim, cans, wks	lb.	...	.32	...	.32	...	.32
drs, lcl, delv	lb.	...	.27	...	.27	...	.27
Isobutyl, ref'd, lcl, drs	lb.	...	.073	...	.073	.073	.09
c-l, drs	lb.	...	.069	...	.069	.068	.08½
tks	lb.	...	.059	...	.059	...	.07½
Isopropyl, refd, 91%, c-l, drs, f.o.b. wks, frt all'd	lb.	...	.36	...	.36	...	.36
Ref'd 98%, drs, f.o.b. wks, frt all'd	gal.	...	.41	...	.41	...	.41
Tech 91% drs, above terms	gal.	...	.33½	...	.33½	...	.33½
tks, same terms	gal.	...	.28½	...	.28½	...	.28½
Tech 98%, drs, above terms	gal.	...	.37½	...	.37½	...	.37½
tks, above terms	gal.	...	.32½	...	.32½	...	.32½
Spec. Solvent, tks, wks	gal.	...	.23½	...	.23½	.19	.23½
Aldehyde ammonia, 100 gal drs	lb.	.80	.82	.80	.82	.80	.82
Aldehyde Bisulfite, bbls, delv	lb.	...	.17	...	.17	...	.17
Aldol, 95%, 55 and 110 gal, drs, delv	lb.	.11	.12	.11	.12	.11	.20
Alphanaphthol, crude, 300 lb bbls	lb.	...	.52	...	.52	...	.52
Alphanaphthylamine, 350 lb bbls	lb.	.32	.34	.32	.34	.32	.34
Alum, ammonia, lump, c-l, bbls, wks	100 lb.	...	3.75	...	3.75	3.40	3.75
delv NY, Phila	100 lb.	...	3.75	...	3.75	3.40	3.75
Granular, c-l, bbls wks	100 lb.	...	3.50	...	3.50	3.15	3.50
Powd, c-l, bbls, wks	100 lb.	...	3.90	...	3.90	3.55	3.90
Chrome, bbls	100 lb.	6.50	6.75	6.50	6.75	6.50	6.75
Potash, lump, c-l, bbls, wks	100 lbs.	...	4.00	...	4.00	3.65	4.00
Granular, c-l, bbls, wks	100 lb.	...	3.75	...	3.75	3.40	3.75
Powd, c-l, bbls, wks	100 lb.	...	4.15	...	4.15	3.80	4.15
Soda, bbls, wks	100 lb.	...	3.25	...	3.25	...	3.25
Aluminum metal, c-l, NY	100 lb.	...	20.00	...	20.00	...	20.00
Acetate, 20%, bbls	lb.	.07½	.09	.07½	.09	.07½	.09
Basic powd, bbls, delv	lb.	.40	.50	.40	.50	.40	.50
Chloride anhyd, 99% wks	lb.	.08	.12	.08	.12	.06	.12
93%, wks	lb.	.05	.08	.05	.08	.05	.08
Crystals, c-l, drs, wks	lb.	.06	.06¼	.06	.06¼	.06	.06¼
Solution, drs, wks	lb.	.02¾	.03¼	.02¾	.03¼	.02¾	.03¼
Formate, 30% sol bbls, c-l, delv	lb.	...	.13	...	.13	...	.13
Hydrate, 96%, light, 90 lb bbls, delv	lb.	.12½	.13½	.12½	.13½	.11¼	.13
heavy, bbls, wks	lb.	.029	.03½	.029	.03½	.029	.03½
Oleate, drs	lb.	.16¾	.18½	.16¾	.18½	.16¾	.18½
Palmitate, bbls	lb.	...	.24½	...	.24½	.23	.24½
Resinate, pp., bbls	lb.	...	.15	...	.15	...	.15
Stearate, 100 lb bbls	lb.	.19	.20	.19	.20	.16	.22½
Sulfate, com, c-l, bgs, wks	100 lb.	...	1.15	...	1.15	...	1.15
c-l, bbls, wks	100 lb.	...	1.35	...	1.35	...	1.35
Sulfate, iron-free, c-l, bags, wks	100 lb.	...	1.45	...	1.45	...	1.45
c-l, bbls, wks	100 lb.	...	1.65	...	1.65	...	1.65
Aminoazobenzene, 110 lb kgs	lb.	...	1.15	...	1.15	...	1.15
Ammonia anhyd fert com, tks	lb.	.04½	.05½	.04½	.05½	.04½	.05½
Ammonia anhyd, 100 lb cyl	lb.	.16	.22	.16	.22	.16	.22
26°, 800 lb drs, delv	lb.	.02¼	.02½	.02¼	.02½	.02¼	.02½
Aqua 26°, tks, NH cont.		...	.04z	...	.04z	...	.04z
Ammonium Acetate, kgs	lb.	.27	.33	.27	.33	.26	.33
Bicarbonate, bbls, f.o.b. wks	100 lb.	...	5.56	...	5.56	5.15	5.71
Bifluoride, 300 lb bbls	lb.	.14½	.16½	.14½	.16½	.14½	.16½
Carbonate, tech, 500 lb bbls	lb.	.08	.12	.08	.12	.08	.12
Chloride, White, 100 lb bbls, wks	100 lb.	4.45	4.90	4.45	4.90	4.45	4.90
Gray, 250 lb. bbls, wks	100 lb.	5.50	6.25	5.50	6.25	5.50	6.25
Lump, 500 lb cks spot	lb.	.10½	.11	.10½	.11	.10½	.11
Lactate, 500 lb bbls	lb.	.15	.16	.15	.16	.15	.16
Laurate, bbls	lb.	...	.23	...	.23	...	.23
Linoleate, 80% anhyd, bbls	lb.	...	.12	...	.12	.11	.15
Naphthenate, bbls	lb	...	.17	...	.17	...	.17
Nitrate, tech, bbls	lb.	...	.0455	...	.0455	.036	.0455
Oleate, drs	lb.	...	.14	...	.14	.11	.14
Oxalate, neut, cryst, powd, bbls	lb.	.19	.20	.19	.20	.19	.20
Perchlorate, kgs	lb.	.17	.19	.17	.19	...	.16
Persulfate, 112 lb kgs	lb.	.21	.22	.21	.22	.21	.24
Phosphate, diabasic tech, powd, 325 lb bbls	lb.	.07½	.10	.07½	.10	.07½	.10
Ricinoleate, bbls	lb.	...	.15	...	.15	...	.15
Stearate, anhyd, bbls	lb.	...	.24½	...	.24½	.22	.24½
Paste, bbls	lb.	...	.06½	...	.06½	.06½	.08

g Grain alcohol 25c a gal. higher in each case. ** On a delv. basis.
z On a f.o.b. wks. basis.

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Ammonium (continued):						
Sulfate, dom, f.o.b., bulk	ton	...	28.00	...	28.00	27.00	28.00
Sulfocyanide, pure, kgs	lb.	...	.65	...	.65	.55	.65
Amyl Acetate (from pentane) tks, delv	lb.	...	.095	...	.095	.095	.10
c-l, drs, delv	lb.	...	.105	...	.105	.105	.11
lcl, drs, delv	lb.	...	.115	...	.115	.115	.112
tech drs, delv	lb.	...	.12½	...	.12½	.10½	.12½
Secondary, tks, delv	lb.	...	.08½	...	.08½	...	.08½
c-l, drs, delv	lb.	...	.09½	...	.09½	...	.09½
tks, delv	lb.	...	.08½	...	.08½	...	.08½
Chloride, norm, drs, wks	lb.	.56	.68	.56	.68	.56	.68
mixed, drs, wks	lb.	.0565	.0665	.0565	.0665	.0565	.077
tks, wks	lb.	...	.0465	...	.0465	.0465	.06
Mercaptan, drs, wks	lb.	...	1.10	...	1.10	...	1.10
Oleate, lcl, wks, drs	lb.	...	.25	...	.25	...	.25
Stearate, lcl, wks, drs	lb.	...	.26	...	.26	...	.26
Amylene, drs, wks	lb.	.102	.11	.102	.11	.102	.11
tks, wks	lb.	...	.09	...	.09	...	.09
Aniline Oil, 960 lb drs and tks	lb.	...	.14½	...	.14½	.14½	.17½
Annatto fine	lb.	.34	.39	.34	.39	.34	.39
Anthracene, 80%	lb.	...	.55	...	.55	.55	.75
Anthraquinone, sublimed, 125 lb bbls	lb.	...	.65	...	.65	...	.65
Antimony metal slabs, ton lots	lb.	...	.14	...	.14	.11¼	.14
Butter of, see Chloride.							
Chloride, soln, cbys	lb.	...	.17	...	.17	...	.17
Needle, powd, bbls	lb.	...	.18	...	.18	.12	.20
Oxide, 500 lb bbls	lb.	no prices		no prices		.10	.15¾
Salt, 63% to 65%, tins	lb.	.42	nom.	.42	nom.	.25¾	.42
Archil, conc, 600 lb bbls	lb.	no prices		no prices		.21	.27
Double, 600 lb bbls	lb.	no prices		no prices		.18	.20
Aroclors, wks	lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbls	lb.	.09½	.10	.09½	.10	.08½	.09
Arsenic, Metal	lb.	...	...	...	...	.40	.60
Red, 224 lb cs kgs	lb.	.17½	.18	.17½	.18	.18	.19
White, 112 lb kgs	lb.	.03	.03¾	.03	.03¾	.03	.03¾

B

Barium Carbonate precip, 200 lb bgs, wks	ton	52.50	62.50	52.50	62.50	52.50	62.50
Nat (witherite) 90% gr, c-l, wks, bgs	ton	45.00	47.00	45.00	47.00	41.00	47.00
Chlorate, 112 lb kgs, NY	lb.	.20	.22	.20	.22	.16½	.25
Chloride, 600 lb bbls, delv, zone 1	ton	77.00	92.00	77.00	92.00	77.00	92.00
Dioxide, 88%, 690 lb drs	lb.	.11	.12	.11	.12	.11	.12
Hydrate, 500 lb bbls	lb.	.04½	.05	.04½	.05	.04½	.05½
Nitrate, bbls	lb.	.09½	.10½	.09½	.10½	.06¾	.10½
Barytes, floated, 350 lb bbls c-l, wks	ton	...	25.15	...	25.15	...	23.65
Bauxite, bulk, mines	ton	7.00	10.00	7.00	10.00	7.00	10.00
Bentonite, c-l, 325 mesh, bgs, wks	ton	...	16.00	...	16.00	...	16.00
200 mesh	ton	...	11.00	...	11.00	...	11.00
Benzaldehyde, tech, 945 lb. drs, wks	lb.	.55	.60	.55	.60	.60	.62
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd	gal.	...	.16	...	.16	...	.16
90% c-l, drs	gal.	...	.21	...	.21	...	.21
Ind pure, tks, frt all'd	gal.	...	.16	...	.16	...	.16
Benzidine Base, dry, 250 lb bbls	lb.	...	.70	...	.70	.70	.72
Benzoyl Chloride, 500 lb drs	lb.	.23	.28	.23	.28	.40	.45
Benzyl Chloride, 95-97% rfd, drs	lb.	.19	.21	.19	.21	.30	.40
Beta-Naphthol, 250 lb bbls, wks	lb.	.23	.24	.23	.24	.23	.24
Naphthylamine, sublimed, 200 lb bbls	lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls	lb.	.51	.52	.51	.52	.51	.52
Bismuth metal	lb.	...	1.25	...	1.25	1.05	1.25
Chloride, boxes	lb.	3.20	3.25	3.20	3.25	3.20	3.25
Hydroxide, boxes	lb.	3.35	3.40	3.35	3.40	3.15	3.40
Oxychloride, boxes	lb.	...	3.10	...	3.10	2.95	3.10
Subbenzoate, boxes	lb.	3.25	3.30	3.25	3.30	3.25	3.30
Subcarbonate, kgs	lb.	1.73	1.76	1.73	1.76	1.43	1.76
Trioxide, powd, boxes	lb.	...	3.57	...	3.57	...	3.57
Subnitrate, fibre, drs	lb.	1.48	1.51	1.48	1.51	1.23	1.51
Blanc Fixe, 400 lb bbls, wks	ton *h*	50.00	80.00	50.00	80.00	40.00	80.00
Bleaching Powder, 800 lb drs, c-l, wks, contract 100 lb.		...	2.00	...	2.00	...	2.00
lcl, drs, wks	lb.	2.25	3.60	2.25	3.60	2.25	3.60
Blood, dried, f.o.b., NY	unit	...	3.35	...	3.35	2.50	4.25
Chicago, high grade	unit	...	3.50	...	3.50	2.30	4.25
Imported shipt	unit	...	3.30	...	3.30	2.65	3.90
Blues, Bronze Chinese Milori							
Prussian Soluble	lb.	.33	.34	.33	.34	.33	.37
Ultramarine,* dry, wks, bbls	lb.	...	.11	...	**.11**	...	**.11**
Regular grade, group 1	lb.	...	.16	...	.16	...	.16
Special, group 1	lb.	...	.19	...	.19	...	.19
Pulp, No. 1	lb.	...	.27	...	.27	...	.27
Bone, 4½ + 50% raw, Chicago	ton	32.00	33.00	32.00	33.00	27.00	35.00
Bone Ash, 100 lb kgs	lb.	.06	.07	.06	.07	.06	.07
Meal, 3% & 50%, imp	ton	...	32.00	...	32.00	22.00	32.00
Domestic, bgs, Chicago	ton	...	32.00	...	32.00	24.00	32.00
Borax, tech, gran, 80 ton lots, sacks, delv	ton *i*	...	43.00	...	43.00	...	43.00
bbls, delv	ton *i*	...	53.00	...	53.00	...	53.00

h Lowest price is for pulp, highest for high grade precipitated; *i* Crystals $6 per ton higher; USP, $15 higher in each case; *Freight is equalized in each case with nearest producing point.

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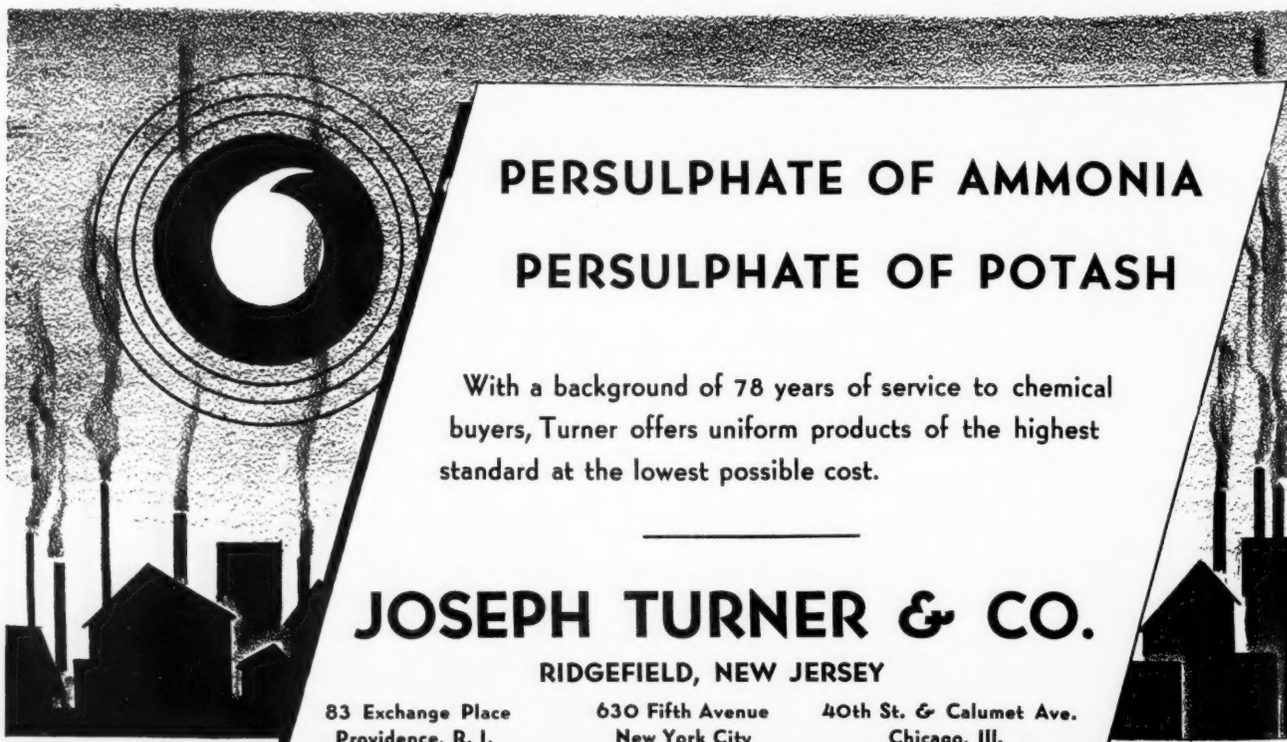

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40th St. & Calumet Ave.
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Chemicals for Industry

		Current Market		1940 Low	1940 High	1939 Low	1939 High
Borax (continued)							
Tech, powd, 80 ton lots, sacks	ton *i*	...	47.00	...	47.00	...	47.00
bbs, delv	ton *i*	...	57.00	...	57.00	...	57.00
Bordeaux Mixture, drs	lb.	.11	.11½	.11	.11½	.11	.11½
Bromine, cases	lb.	.30	.43	.30	.43	.30	.43
Bronze, Al, pwd, 300 lb drs	lb.	...	.57	...	.57	.90½	.92½
Gold, blk	lb.	.60	.65	.60	.65	.45	.65
Butanes, com 16-32° group 3 tks	lb.	.02¼	.03¾	.02¼	.03¾	.02¼	.03¾
Butyl, Acetate, norm drs, frt all'd	lb.	...	.10	...	.10	.09	.10
tks, frt all'd	lb.	...	.09	...	.09	.08	.09
Secondary, tks, frt all'd	lb.	...	.06½	...	.06½	.05½	.06½
drs, frt all'd	lb.	.07½	.08	.07½	.08	.068	.08
Aldehyde, 50 gal drs, wks	lb.	.15½	.17½	.15½	.17½	.15½	.17½
Carbinol, norm drs, wks	lb.	.60	.75	.60	.75	.60	.75
Crotonate, norm, 55 and 110 gal drs, delv	lb.	...	.35	...	.35	.35	.75
Lactate	lb.	.23½	.24½	.23½	.24½	.22½	.24½
Oleate, drs, frt all'd	lb.	...	.25	...	.25	...	.25
Propionate, drs	lb.	.16½	.17	.16½	.17	.16½	.18½
tks, delv		...	.15½	...	.15½	.15½	.17
Stearate, 50 gal drs	lb.	...	.28½	...	.28½	.26½	.28½
Tartrate, drs	lb.	.55	.60	.55	.60	.55	.60
Butyraldehyde, drs, lcl, wks	lb.	...	.35½	...	.35½	...	.35½
Cadmium Metal	lb.	...	.80	...	.80	.50	.85
Sulfide, orange, boxes	lb.	.75	.85	.75	.85	.75	.90
Calcium, Acetate, 150 lb bgs c-l, delv	100 lb.	...	1.90	...	1.90	1.65	1.90
Arsenate, c-l, E of Rockies, dealers, drs	lb.	.06¾	.07¼	.06¾	.07¼	.06¾	.07¼
Carbide, drs	lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bgs c-l	lb.	..	1.00	...	1.00	...	1.00
Chloride, flake, 375 lb drs, burlap bgs, c-l, delv	ton	...	22.00	...	22.00	...	22.00
paper bags, c-l, delv	ton	23.00	36.00	23.00	36.00	23.00	36.00
Solid, 650 lb drs, c-l, delv	ton	...	20.00	...	20.00	...	20.00
Ferrocyanide, 350 lb bbls wks	lb.	...	.17	..	.17	..	.17
Gluconate, Pharm, 125 lb bbls	lb.	.50	.57	.50	.57	.50	.57
Levulinate, less than 25 bbl lots, wks	lb.	...	3.00	...	3.00	...	3.00
Nitrate, 100 lb bags	ton	...	28.00	...	28.00	...	28.00
Palmitate, bbls	lb.	.22	.23	.22	.23	.22	.23
Phosphate, tribasic, tech, 450 lb bbls	lb.	.06½	.07½	.06½	.07½	.06½	.07½
Resinate, precip, bbls	lb.	.13	.14	.13	.14	.13	.14
Stearate, 100 lb bbls	lb.	.20½	.22½	.20½	.22½	.19	.21
Camphor, slabs	lb.	.83	.84	.83	.84	.46	.77
Powder	lb.	.83	.84	.83	.84	.45	.47
Carbon Bisulfide, 500 lb drs	lb.	.05	.05¾	.05	.05¾	.05	.05¾
Black, c-l, bgs, delv, price varying with zone†	lb.	.02¾	.03¾	.02¾	.03¾	.02¾	.03¾
lcl, bgs, f.o.b.whse	lb.	...	.06¼	...	.06¼	...	.06¼
cartons, f.o.b. whse	lb.	...	.06¼	...	.06¼	...	.06¼
cases, f.o.b. whse	lb.	...	.07	...	.07	...	.07
Decolorizing, drs, c-l	lb.	.08	.15	.08	.15	.08	.15
Dioxide, Liq 20-25 lb cyl	lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, 55 or 110 gal drs, c-l, delv	lb.	.05	.05½	.05	.05½	.05	.05½
Casein, Standard, Dom, grd	lb.	.13	.14	.13	.14	.07	.23
80-100 mesh, c-l bgs	lb.	.13½	.14½	.13½	.14½	.07½	.23½
Castor Pomace, 5½ NH_3, c-l, bgs, wks	ton	...	17.50	...	17.50	16.50	18.50
Imported, ship, bgs	ton	..	20.00	...	20.00	18.00	20.00
Celluloid, Scraps, ivory cs	lb.	.12	.15	.12	.15	.12	.15
Transparent, cs	lb.	...	.20	...	.20	...	.20
Cellulose, Acetate, 50 lb kgs	lb.	...	.34	...	.34	.35	.36
Chalk, dropped, 175 lb bbls	lb.	.02¾	.03¼	.02¾	.03¼	.02¾	.03¾
Precip, heavy, 560 lb cks	lb.	.02¾	.03¼	.02¾	.03¼	.02¼	.03¼
Light, 250 lb cks	lb.	.03¼	.04	.03¼	.04	.03¼	.04
Charcoal, Hardwood, lump, blk, wks	bu.	...	.15	...	.15	...	.15
Softwood, bgs, delv*	ton	25.00	36.00	25.00	36.00	23.00	36.00
Willow, powd, 100 lb bbls, wks	lb.	.06	.07	.06	.07	.06	.07
Chestnut, clarified, tks, wks	lb.	...	.01¾	...	.01¾	...	.01⅝
25%, bbls, wks	lb.	...	.02½	...	.02½	...	.02
China Clay, c-l, blk mines	ton	...	7.60	...	7.60	7.00	7.60
Imported, lump, blk	ton	...	26.00	...	26.00	22.00	26.00
Chlorine, cyls, lcl, wks, contract	lb.	.07½	.08½	.07½	.08½	.07½	.08½
cyls, c-l, contract	lb *j*	...	.05¼	...	.05¼	.05¼	.05½
Liq. tk, wks, contract 100	lb.	...	1.75	...	1.75	1.75	2.00
Multi, c-l, cyls, wks, cont	lb.	...	1.90	...	1.90	1.90	2.15
Chloroacetophenone, tins, wks	lb.	3.00	3.50	3.00	3.50	3.00	3.50
Chlorobenzene, Mono, 100 lb drs, lcl, wks	lb.	.06	.07½	.06	.07½	.06	.07½
Chloroform, tech, 1000 lb drs	lb.	.20	.21	.20	.21	.20	.21
USP, 25 lb tins	lb.	.30	.31	.30	.31	.30	.31
Chloropicrin, comml cyls	lb.	...	.80	...	.80	...	.80
Chrome, Green, CP	lb.	.21	.25	.21	.25	.21	.25
Yellow	lb.	.13½	.14½	.13½	.14½	.13½	.15½
Chromium Acetate, 8% Chrome, bbls	lb.	...	.05¾	...	.05¾	.05	.08
Fluoride, powd, 400 lb bbl	lb.	.27	.28	.27	.28	.27	.28

j A delivered price; * Depends upon point of delivery; † New bulk price, tank cars ¼c per lb. less than bags in each zone.

		Current Market		1940 Low	1940 High	1939 Low	1939 High
Coal tar, bbls	bbl.	7.50	8.00	7.50	8.00	7.50	8.00
Cobalt Acetate, bbls	lb.	...	.71	...	.71	.65	.71
Carbonate tech, bbls	lb.	1.38	1.60	1.38	1.60	1.25	1.63
Hydrate, bbls	lb.	...	1.78	...	1.78	...	1.78
Linoleate, solid, bbls	lb.	...	.33	...	.33	...	.33
paste, 6%, drs	lb.	...	.31	...	.31	...	.31
Oxide, black, bgs	lb.	...	1.84	...	1.84	1.67	1.84
Resinate, fused, bbls	lb.	...	.13½	...	.13½	...	.13½
Precipitated, bbls	lb.	...	.34	...	.34	...	.34
Cochineal, gray or bk bgs	lb.	.37	.38	.37	.38	.35	.38
Teneriffe silver, bgs	lb.	.38	.39	.38	.39	.36	.39
Copper, metal, electrol 100	lb.	...	11.62½	...	11.62½	.10	12.50
Acetate, normal, bbls, wks	lb.	.22	.24	.22	.24	.21	.24
Carbonate, 52-54% 400 lb. bbls	lb.	...	.169	...	.169	.14½	.169
Chloride, 250 lb bbls	lb.	...	.18	...	.18	.12½	.18
Cyanide, 100 lb drs	lb.	...	.34	...	.34	...	.34
Oleate, precip, bbls	lb.	...	.20	...	.20	...	.20
Oxide, black, bbls, wks	lb.	...	.18¾	...	.18¾	.15	.18¾
red 100 lb bbls	lb.	...	.20	...	.20	.15¾	.20
Sub-acetate verdigris, 400 lb bbls	lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls, c-l, wks 100	lb.	...	4.60	...	4.60	4.10	4.75
Copperas crys and sugar bulk c-l, wks	ton	...	14.00	...	14.00	14.00	16.00
Corn Sugar, tanners, bbls 100	lb.	...	2.99	...	2.99	2.89	3.19
Corn Syrup, 42°, bbls 100	lb.	...	3.02	...	3.02	2.92	3.17
43°, bbls 100	lb.	...	3.07	...	3.07	2.97	3.22
Cotton, Soluble, wet, 100 lb bbls	lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, powd & gran 300 lb bbls	lb.	.28¼	.28¾	.28¼	.28¾	.22¼	.25¾
Creosote, USP 42 lb cbys	lb.	.45	.47	.45	.47	.45	.47
Oil, Grade 1 tks	gal.	.13½	.14	.13½	.14	.13½	.14
Grade 2	gal.	.122	.132	.122	.132	.122	.132
Cresol, USP, drs	lb.	.09¾	.10¼	.09¾	.10¼	.09½	.10½
Crotonaldehyde, 97%, 55 and 110 gal drs, wks	lb.	.11	.12	.11	.12	.11	.22*
Cutch, Philippine, 100 lb bale	lb.	...	.04	...	.04	.04	.04½
Cyanamid, pulv, bags, c-l, frt all'd, nitrogen basis, unit		...	1.27½	...	1.27½	...	1.27½
D							
Derris root 5% rotenone, bbls	lb.	.24	.30	.24	.30	.24	.30
Dextrin, corn, 140 lb bgs f.o.b., Chicago	100 lb.	...	3.40	...	3.40	3.30	3.75
British Gum, bgs	100 lb.	3.65	3.75	3.65	3.75	3.55	3.95
Potato, Yellow, 220 lb bgs	lb.	...	.07¾	...	.07¾	.07	.08¾
White, 220 lb bgs, lcl	lb.	.08½	.09	.08½	.09	.08	.09
Tapioca, 200 bgs, lcl	lb.	...	.0715	...	.0715	...	.0715
White, 140 lb bgs	100 lb.	3.35	3.55	3.35	3.55	3.25	3.70
Diamylamine, c-l, drs, wks	lb.	...	.47	...	.47	...	.47
lcl drs, wks	lb.	...	.50	...	.50	...	.50
tks, wks	lb.	...	.45	...	.45	...	.45
Diamylene, drs, wks	lb.	.095	.102	.095	.102	.095	.102
tks, wks	lb.	...	.08½	...	.08½	...	.08½
Diamylether, wks, drs	lb.	.085	.092	.085	.092	.085	.092
tks, wks	lb.	...	.075	...	.075	...	.075
Oxalate, lcl, drs, wks	lb.	...	.30	...	.30	...	.30
Diamylphthalate, drs, wks	lb.	.21	.21½	.21	.21½	.19	.21
Diamyl Sulfide, drs, wks	lb.	...	1.10	...	1.10	...	1.10
Diatomaceous Earth, see Kieselguhr.							
Dibutoxy Ethyl Phthalate, drs, wks	lb.	...	.35	...	.35	...	.35
Dibutylamine, lcl, drs, wks	lb.	...	.53	...	.53	.53	.55
c-l drs, wks	lb.	...	.50	...	.50	...	...
tks, wks	lb.	...	.48	...	.48	...	...
Dibutyl Ether, drs, wks, lcl	lb.	.24½	.25	.24½	.25	.24½	.25
Dibutylphthalate, drs, wks, frt all'd	lb.	.19	.19½	.19	.19½	.19	.19½
Dibutyltartrate, 50 gal drs	lb.	...	.50	...	.50	.45	.54
Dichlorethylene, drs	lb.	...	.25	...	.25	...	.25
Dichloroethylether, 50 gal drs, wks	lb.	.15	.16	.15	.16	.15	.16
tks, wks	lb.	...	.14	...	.14	...	.14
Dichloromethane, drs, wks	lb.	...	.23	...	.23	...	.23
Dichloropentanes, drs, wks	lb.	no prices		no prices		no prices	
tks, wks	lb.	no prices		no prices		no prices	
Diethanolamine, tks, wks	lb.	...	.22½	...	.22½	.22½	.23
Diethylamine, 400 lb drs, lcl, f.o.b., wks	lb.	...	.70	...	.70	.70	3.00
Diethylaniline, 850 lb drs	lb.	.40	.52	.40	.52	.40	.52
Diethyl Carbinol, drs	lb.	.60	.75	.60	.75	.60	.75
Diethylcarbonate, com drs	lb.	.31¾	.35	.31¾	.35	.31¾	.35
Diethylorthotoluidin, drs	lb.	.64	.67	.64	.67	.64	.67
Diethylphthalate, 1000 lb drs	lb.	.19	.19½	.19	.19½	.19	.19½
Diethylsulfate, tech, drs, wks, lcl	lb.	.13	.14	.13	.14	.13	.14
Diethyleneglycol, drs	lb.	.14½	.15½	.14½	.15½	.14½	.17
Mono ethyl ethers, drs	lb.	.15	.16	.15	.16	.15	.16
tks, wks	lb.	...	.13½	...	.13½	.13½	.14
Mono butyl ether, drs	lb.	.23	.24	.23	.24	.23	.24
tks, wks	lb.	...	.22	...	.22	...	.22
Diethylene oxide, 50 gal drs, wks	lb.	.20	.24	.20	.24	.20	.24
Diglycol Laurate, bbls	lb.	.17	.21	.17	.21	.15	.23
Oleate, bbls	lb.	...	.13	...	.13	.13	.20
Stearate, bbls	lb.	...	.26	...	.26	.20	.28
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis	lb.	...	1.00	...	1.00	...	1.00
Dimethylaniline, 340 lb drs	lb.	.23	.24	.23	.24	.23	.24
Dimethyl Ethyl Carbinol, drs	lb.	.60	.75	.60	.75	.60	.75
Dimethyl phthalate, drs, wks, frt all'd	lb.	...	.18½	...	.18½	...	.19
Dimethylsulfate, 100 lb drs	lb.	.45	.50	.45	.50	.45	.50

k Higher price is for purified material; * These prices were on a delivered basis.

ESTABLISHED 1880

WM. S. GRAY & CO.

342 MADISON AVE. NEW YORK

Murray Hill 2-3105 Cable: Graylime

Acetic Acid—Acetate of Lime
Acetate of Soda
Acetone C. P.
Butyl Alcohol—Butyl Acetate
Methanol—Methyl Acetone
Formaldehyde
Denatured Alcohol
Turpentine
Rosin
Phenol U. S. P.
Benzol
Toluol
Xylol
Whiting
Magnesium Carbonate
Magnesium Oxide
Precipitated Chalk

Anti-Freeze—Methanol and Alcohol

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9462

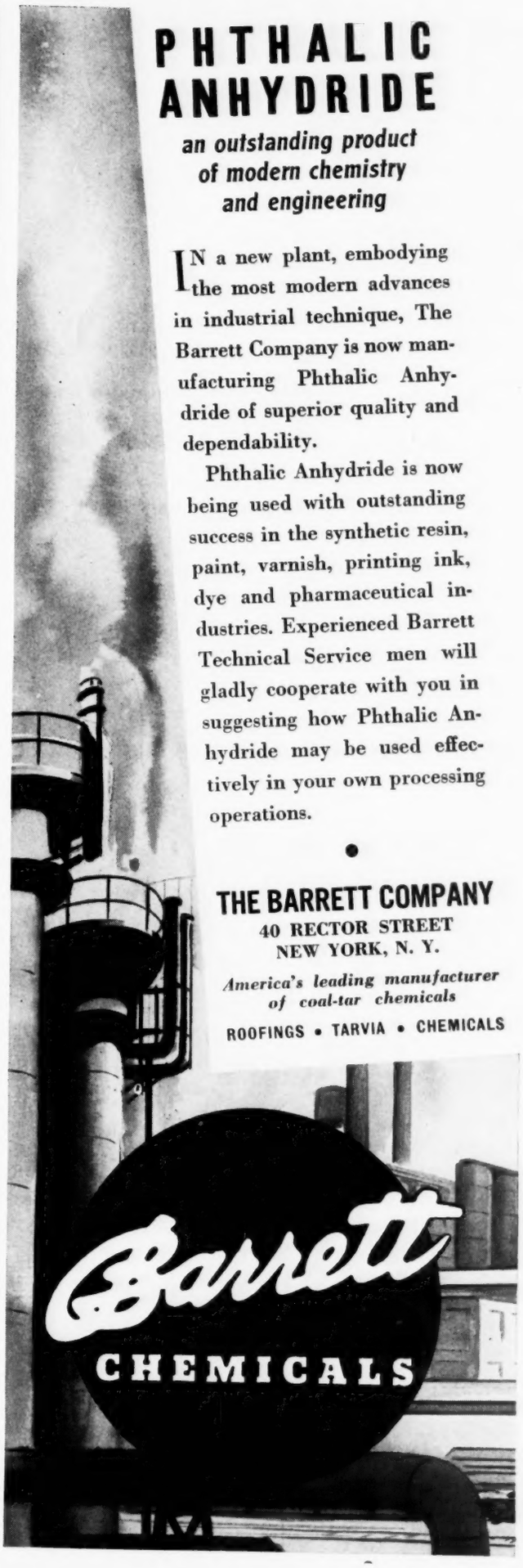
Dinitrobenzene
Glauber's Salt

Prices

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Dinitrobenzene, 400 lb bbls lb. *k*	.18	.19	.18	.19	.16	.19
Dinitrochlorobenzene, 400 lb bbls lb.	...	.14	...	.14	.13½	.14
Dinitronaphthalene, 350 lb bbls lb.	.35	.38	.35	.38	.35	.38
Dinitrophenol, 350 lb bbls lb.	.22	.23	.22	.23	.22	.24
Dinitrotoluene, 300 lb bbls lb.	...	.15½	...	.15½	...	.15½
Diphenyl, bbls lb.	.15	.25	.15	.25	.15	.25
Diphenylamine lb.	.31	.32	.31	.32	.32	.32
Diphenylguanidine, 100 lb drs lb.	.35	.37	.35	.37	.31	.37
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt ton	...	nom.	...	nom.	...	nom.
Extract lb.	.05¾	.06¾	.05¾	.06¾	.05¾	.06¾
E						
Egg Yolk, dom., 200 lb cases lb.	.60	.62	.58	.62	.59	.69
Epsom Salt, tech, 300 lb bbls c-l, NY 100 lb.	1.90	2.10	1.90	2.10	1.90	2.10
USP, c-l, bbls 100 lb.	...	2.10	...	2.10	...	2.10
Ether, USP anaesthesia 55 lb drs lb.	...	.26	...	.26	.22	.23
Isopropyl 50 gal drs lb.	.07	.08	.07	.08	.07	.08
tks, frt all'd lb.	...	.06	...	.06	...	.06
Nitrous conc bottles lb.	...	.68	...	.68	...	.68
Synthetic, wks, drs lb.	.08	.09	.08	.09	.08	.09
Ethyl Acetate, 85% Ester tks, frt all'd' lb.	...	.06½	...	.06½	.051	.061
drs, frt all'd lb.	.07½	.08	.07½	.08	.061	.08
99%, tks, frt all'd lb.	...	.0685	...	.0685	.0585	.0685
drs, frt all'd lb.	...	.0785	...	.0785	.0685	.0785
Acetoacetate, 110 gal drs lb.	...	.27½	...	.27½	...	.27½
Benzylaniline, 300 lb drs lb.	.86	.88	.86	.88	.86	.88
Bromide, tech drs lb.	.50	.55	.50	.55	.50	.55
Cellulose, drs, wks, frt all'd lb.	.45	.50	.45	.50	.45	.50
Chloride, 200 lb drs lb.	.18	.20	.18	.20	.22	.24
Chlorocarbonate, cbys lb.	...	.30	...	.30	...	.30
Crotonate, drs lb.	...	.35	...	.35	.35	.75
Formate, drs, frt all'd lb.	.23	.24	.23	.24	.27	.28
Lactate, drs, wks lb.	...	.33½	...	.33½	...	.33½
Oxalate, drs, wks lb.	...	.25	...	.25	.30	.34
Oxybutyrate, 50 gal drs, wks lb.	.30	.30½	.30	.30½	.30	.30½
Silicate, drs, wks lb.	...	.77	...	.77	...	.77
Ethylene Dibromide, 60 lb drs lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont lb.	.75	.85	.75	.85	.75	.85
Anhydrous lb.	...	.75	...	.75	...	.75
Dichloride, 50 gal drs, wks lb.	.0595	.0694	.0595	.0694	.0545	.0994
Glycol, 50 gal drs, wks lb.	.14½	.18½	.14½	.18½	.14½	.21
tks, wks lb.	...	.13½	...	.13½	.13½	.16
Mono Butyl Ether, drs, wks lb.	.16½	.21	.16½	.21	.16½	.22
tks, wks lb.	...	.15½	...	.15½	.15½	.19
Mono Ethyl Ether, drs, wks lb.	.14½	.15	.14½	.15	.14½	.17
tks, wks lb.	...	.13½	...	.13½	.13½	.15
Mono Ethyl Ether Acetate, drs, wks lb.	.11½	.13	.11½	.13	.11½	.14
tks, wks lb.	...	.10½	...	.10½	.10½	.13
Mono Methyl Ether, drs wks lb.	.16	.17	.16	.17	.16	.22
tks, wks lb.	...	.14½	...	.14½	.14½	.17
Oxide, cyl lb.	.50	.55	.50	.55	.50	.55
Ethylideneaniline lb.	45	.47½	.45	.47½	.45	.47½
F						
Feldspar, blk pottery ton	17.00	19 00	17.00	19.00	17.00	19.00
Powd, blk wks ton	14.00	14.50	14.00	14.50	14.00	14.50
Ferric Chloride, tech, crys, 475 lb bbls lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Fish Scrap, dried, unground wks unit *l*	...	4.25	...	4.25	3.00	4.25
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis unit *m*	...	3.00	...	3.00	2.35	3.00
Fluorspar, 98% bgs lb.	...	32.60	...	32.60	30.00	33.00
Formaldehyde, USP, 400 lb bbls, wks lb.	.05¾	.06¼	.05¾	.06¼	.05¾	.06¼
Fossil Flour lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines ton	...	10.00	...	10.00	10.00	11.00
Imp powd, c-l, bgs ton	...	25.00	...	25.00	23.00	30.00
Furfural (tech) drs, wks lb.	.10	.15	.10	.15	.10	.15
Furfuramide (tech) 100 lb drs lb.	...	.30	...	.30	...	.30
Fusel Oil, 10% impurities lb.	.16	.17¼	.16	.17¼	.12½	.17¼
Fustic, crystals, 100 lb boxes lb.	.24	.28	.24	.28	.22	.28
Liquid 50°, 600 lb bbls lb.	.10½	.14	.10½	.14	.09½	.14
Solid, 50 lb boxes lb.	.19	.21	.19	.21	.17½	.21
G						
G Salt paste, 360 lb bbls lb.	.45	.47	.45	.47	.45	.47
Gambier, com 200 lb bgs lb.	...	.07	...	.07	.06¾	.07¾
Singapore cubes, 150 lb bgs 100 lb.	...	.10	...	.10	.08	.10
Gelatine, tech, 100 lb cs lb.	.42	.43	.42	.43	.42	.50
Glauber's Salt, tech, c-l, bgs, wks* 100 lb.	.95	1.18	.95	1.18	.95	1.18
Anhydrous, see Sodium Sulfate						

l + 10; m + 50; * Bbls. are 20c higher.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Glue, bone, com grades, c-l bgs ..... lb.	.13½	.15½	.13½	.15½	.13½	.15½
Better grades, c-l, bgs lb.	.17	.18	.17	.18	.11½	.15½
Glycerin, CP, 550 lb drs lb.	...	.12½	...	.12½	...	.12½
Dynamite, 100 lb drs ... lb.	...	nom.	...	nom.	...	.09
Saponification, drs ..... lb.	...	.13	...	.13	.08½	.10
Soap Lye, drs ..... lb.	.07¾	.08¼	.07¾	.08¼	.07½	.07⅞
Glyceryl Bori-Borate, bbls lb.	...	.40	...	.40	...	.40
Monoricinoleate, bbls ... lb.	...	.27	...	.27	...	.27
Monostearate, bbls ..... lb.	...	.30	...	.30	...	.30
Oleate, bbls ..... lb.	...	.22	...	.22	...	.22
Phthalate ..... lb.	...	.37	...	.37	...	.37
Glyceryl Stearate, bbls ... lb.	...	.18	...	.18	.24	.27½
Glycol Bori-Borate, bbls. . lbs.	...	.22	...	.22	.22	.23
Phthalate, drs ..... lb.	...	.38	...	.38	.38	.40
Stearate, drs ..... lb.	...	.26	...	.26	...	.26
GUMS						
Gum Aloes, Barbadoes ... lb.	.85	.90	.85	.90	.85	.90
Arabic, amber sorts ... lb.	.13½	.14	.13½	.14	.09	.24
White sorts, No. 1, bgs lb.	.33	.35	.33	.35	.23	.35
No. 2, bgs ..... lb.	.32	.34	.32	.34	.21	.34
Powd, bbls ..... lb.	.16½	.17	.16½	.17	.12½	.27
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b. NY ..... lb.	.02½	.10½	.02½	.10½	.02½	.10½
California, f.o.b. NY, drs ton	29.00	55.00	29.00	55.00	29.00	55.00
Egyptian, 200 lb cases, f.o.b. NY ..... lb.	.12	.15	.12	.15	.12	.15
Benzoin Sumatra, USP, 120 lb cases ..... lb.	.23	.24	.23	.24	.17	.34
Copal, Congo, 112 lb bgs, clean, opaque ..... lb.	...	.29½	...	.29½	.18¼	.29½
Dark amber ..... lb.	...	.11⅜	...	.11⅜	.07⅞	.11⅜
Light amber ..... lb.	...	.17	...	.17	.11¼	.17
Copal, East India, 180 lb bgs						
Macassar pale bold .... lb.	...	.15⅝	...	.15⅝	.11⅜	.15¼
Chips ..... lb.	...	.09	...	.09	.05⅜	.08½
Dust ..... lb.	...	.06¾	...	.06¾	.03¼	.07⅛
Nubs ..... lb.	...	.14⅜	...	.14⅜	.09½	.13¾
Singapore, Bold ..... lb.	...	.17½	...	.17½	.14	.18¼
Chips ..... lb.	...	.09⅞	...	.09⅞	.05⅝	.10¼
Dust ..... lb.	...	.06¾	...	.06¾	.03¼	.07⅛
Nubs ..... lb.	...	.13½	...	.13½	.09⅝	.14⅜
Copal Manila, 180-190 lb baskets, Loba A .... lb.	...	.17⅜	...	.17¾	.10½	.14⅞
Loba B ..... lb.	...	.16¾	...	.16¾	.09¾	.14½
Loba C ..... lb.	.14⅛	.16⅛	.14⅛	.16⅛	.09	.14⅛
DBB ..... lb.	...	.14½	...	.14½	.07⅞	.12½
Dust ..... lb.	...	.08¾	...	.08¾	.05⅛	.08½
MA sorts ..... lb.	...	.13¾	...	.13¾	.05⅞	.11
Copal Pontianak, 224 lb cases, bold genuine .. lb.	...	.18½	...	.18½	.15¼	.18½
Chips ..... lb.	...	.10½	...	.10½	.07⅛	.11½
Mixed ..... lb.	...	.16⅝	...	.16⅝	.13⅜	.16⅝
Nubs ..... lb.	...	.13½	...	.13½	.10½	.14⅜
Split ..... lb.	...	.16⅛	...	.16⅛	.12	.16⅛
Damar Batavia, 136 lb cases						
A ..... lb.	...	.22¾	...	.22¾	.20	.23¾
B ..... lb.	...	.21⅛	...	.21⅛	.18½	.21⅛
C ..... lb.	...	.15¼	...	.15¼	.13½	.15⅝
D ..... lb.	...	.13¾	...	.13¾	.12¼	.14¼
A/D ..... lb.	...	.14½	...	.14½	.12¾	.15¼
A/E ..... lb.	...	.13⅜	...	.13⅜	.11⅜	.13¾
E ..... lb.	...	.10⅜	...	.10⅜	.07⅜	.10
F ..... lb.	...	.08¾	...	.08¾	.07¼	.08¾
Singapore, No. 1 ..... lb.	...	.19⅝	...	.19⅝	.13¼	.19½
No. 2 ..... lb.	...	.15¾	...	.15¾	.10½	.16⅜
No. 3 ..... lb.	...	.09	...	.09	.05¼	.09⅛
Chips ..... lb.	...	.12½	...	.12½	.09¼	.12½
Dust ..... lb.	...	.09	...	.09	.05¼	.09⅛
Seeds ..... lb.	...	.10½	...	.10½	.07⅜	.10½
Elemi, cns, c-l ..... lb.	...	.11⅝	...	.11⅝	.08⅛	.12⅝
Ester ..... lb.	.06¼	.06¾	.06¼	.06¾	.06	.07
Gamboge, pipe, cases ... lb.	.70	.75	.70	.75	.55	.80
Powd, bbls ..... lb.	.75	.80	.75	.80	.60	.85
Ghatti, sol, bgs ..... lb.	.11	.15	.11	.15	.11	.15
Karaya, bbls, bxs, drs ... lb.	.14	.33	.14	.33	.14	.33
Kauri, NY						
Brown XXX, cases .... lb.	...	.60	...	60	.60	.60½
BX ..... lb.	...	.38	...	.38	...	.38
B1 ..... lb.	...	.28	...	.28	...	.28
B2 ..... lb.	...	.24	...	.24	...	.24
B3 ..... lb.	...	.18½	...	.18½	...	.18½
Pale XXX ..... lb.	...	.61	...	.61	...	.61
No. 1 ..... lb.	...	.41	...	.41	...	.41
No. 2 ..... lb.	...	.24	...	.24	...	.24
No. 3 ..... lb.	...	.17¾	...	.17¾	...	.17¾
Kino, tins ..... lb.	4.00	4.50	4.00	4.50	2.50	4.50
Mastic ..... lb.	.85	.90	.85	.90	.55	.90
Sandarac, prime quality, 200 lb bgs & 300 lb cks. . lb.	...	.37	...	.37	.15	.37
Senegal, picked bags ..... lb.	...	.30	...	.30	.25	.30
Sorts ..... lb.	...	.13	...	.13	.09¼	.13
Thus, bbls ..... 280 lbs.	15.00	15.25	15.00	15.25	13.50	15.25
Tragacanth, No. 1, cases. . lb.	2.65	2.70	2.65	2.70	2.25	2.50
No. 2 ..... lb.	2.55	2.60	2.55	2.60	1.90	2.40
No. 3 ..... lb.	2.45	2.50	2.45	2.50	1.60	2.25
Yacca, bgs ..... lb.	.03½	.04	.03½	.04	.03½	.08
H						
Helium, cyl (200 cu. ft.) cyl.	...	25.00	...	25.00	...	25.00
Hematine crystals, 400 lb bbls lb.	.20	.30	.20	.30	.20	.34
Hemlock, 25%, 600 lb bbls. wks ..... lb.	.03⅛	.03⅜	.03⅛	.03⅜	.03	.03⅜
tks ..... lb.	...	.03	...	.03	.02⅝	.02¾
Hexalene, 50 gal drs, wks lb.	...	.30	...	.30	...	.30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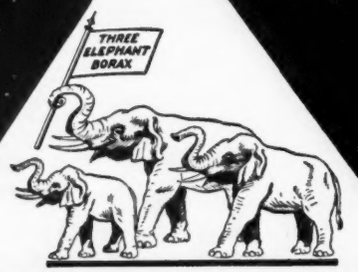

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	Current Market	1940 Low	1940 High	1939 Low	1939 High
Hexane, normal 60-70° C. Group 3, tks gal.	...	.10½	...	.10½	...	.10½
Hexamethylenetetramine, powd, drs lb.	.32	.33	.32	.33	.32	.36
Hexyl Acetate, secondary, delv, drs lb.	.13	.13½	.13	.13½	.13	.13½
tks lb.	...	.12	...	.12	...	.12
Hoof Meal, f.o.b. Chicago unit	3.00	3.15	3.00	3.15	2.50	3.25
Hydrogen Peroxide, 100 vol, 140 lb cbys lb.	...	.20	...	.20	.19½	.20
Hydroxylamine Hydrochloride lb.	...	3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls lb.	...	.14	...	.14	.13	.21
I						
Indigo, Bengal, bbls lb.	1.63	1.67	1.63	1.67	...	2.40
Synthetic, liquid lb.	.16½	.19	.16½	.19	.16½	.19
Iodine, Resublimed, jars lb.	...	2.00	...	2.00	1.75	2.00
Irish Moss, ord, bales lb.	.15	.16	.15	.16	.10	.10
Bleached, prime, bales lb.	.28	.30	.28	.30	.19	.20
Iron Acetate Liq. 17°, bbls delv lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride.						
Nitrate, coml, bbls 100 lb.	2.75	3.00	2.75	3.00	2.32	3.11
Isobutyl Carbinol (128-132° C) drs, wks lb.	.33	.34	.33	.34	.33	.34
tks, wks lb.	...	.32	..	.32	...	.32
Isopropyl Acetate, tks, frt all'd lb.	...	.05½	...	.05½	.051	.06
drs, frt all'd lb.	.06½	.07	.06½	.07	.061	.07
Ether, see Ether, isopropyl.						
Keiselguhr, dom bags, c-l, Pacific Coast ton	22.00	85.00	22.00	85.00	22.00	85.00
L						
Lead Acetate, f.o.b. NY, bbls, White, broken lb.	...	.11	...	.11	.10	.11
cryst, bbls lb.	...	.11	...	.11	.10	.11
gran, bbls lb.	...	.11¾	...	.11¾	.10¾	.11¾
powd, bbls lb.	...	.11¾	...	.11¾	.10¾	.11¾
Arsenate, East, drs lb.	...	.11	...	.11	.10	.11½
Linoleate, solid, bbls lb.	...	.19	...	.19	...	.19
Metal, c-l, NY 100 lb.	...	5.25	...	5.25	4.75	5.55
Nitrate, 500 lb bbls, wks lb.	.11	.14	.11	.14	.10	.12
Oleate, bbls lb.	.18½	.20	.18½	.20	.18½	.20
Red, dry, 95% Pb_3O_4, delv lb.	...	.07¾	...	.07¾	.07¼	.18½
97% Pb_3O_4, delv lb.	...	.08	...	.08	.07½	.0835
98% Pb_3O_4, delv lb.	...	.08¼	...	.08¼	.07¾	.0860
Resinate, precip, bbls lb.	...	.16½	...	.16½	...	.16½
Stearate, bbls lb.	...	.26	...	.26	.22	.25
Titanate, bbls, c-l, f.o.b. wks, frt all'd lb.	.10	.10¼	.10	.10¼	.11	.11½
White, 500 lb bbls, wks, lb.	...	.07	...	.07	...	.07
Basic sulfate, 500 lb bbls, wks lb.	...	.06¼	...	.06¼	...	.06¼
Lime, chemical quicklime, f.o.b., wks, bulk ton	7.00	8.00	7.00	8.00	7.00	8.00
Hydrated, f.o.b. wks ton	8.50	12.00	8.50	12.00	8.50	12.00
Lime Salts, see Calcium Salts						
Lime, sulfur, dealers, tks gal.	.08	.11½	.08	.11½	.08	.11½
drs gal.	.11	.16	.11	.16	.11	.16
Linseed Meal, bgs ton	...	37.00	...	37.00	34.00	42.00
Litharge, coml, delv, bbls lb.	...	.06¾	...	.06¾	.06¼	.071
Lithopone, dom, ordinary, delv, bgs lb.	...	.036	...	.036	.03¾	.04⅛
bbls lb.	...	.03¾	...	.03¾	.04	.04⅜
High strength, bgs lb.	...	.05	...	.05	.05¼	.05⅝
bbls lb.	...	.05¼	...	.05¼	.05½	.05⅞
Titanated, bgs lb.	...	.05	...	.05	.05¼	.05⅝
bbls lb.	...	.05¼	...	.05¼	.05½	.05⅞
Logwood, 51°, 600 lb bbls lb.	.10½	.12½	.10½	.12½	.09½	.12½
Solid, 50 lb boxes lb.	.16½	.20½	.16½	.20½	.15	.20½
M						
Madder, Dutch lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbls ton	62.00	66.00	62.00	66.00	58.00	66.00
Magnesium Carb, tech, 70 lb bgs, wks lb.	...	.06¼	...	.06¼	.05¾	.06½
Chloride flake, 375 lb bbls, c-l, wks ton	32.00	42.00	32.00	42.00	39.00	42.00
Fluosilicate, crys, 400 lb bbls, wks lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, calc tech, heavy bbls, frt all'd lb.	.25	.30	.25	.30	.25	.30
Light bbls above basis lb.	.20	.25	.20	.25	.20	.25
USP Heavy, bbls, above basis lb.	.25	.30	.25	.30	.25	.30
Palmitate, bbls lb.	.33	nom.	.33	nom.	.33	nom.
Silicofluoride, bbls lb.	.11	.11½	.11	.11½	.09½	.11½
Stearate, bbls lb.	.24	.27	.24	.27	.21	.24
Manganese, acetate, drs lb.	...	.26½	...	.26½	...	.26½
Borate, 30%, 200 lb bbls lb.	.15	.16	.15	.16	.15	.16
Chlorate, 600 lb cks lb.	...	.08½	...	.08½	.07½	.12
Dioxide, tech (peroxide), paper bags, c-l ton	...	66.50	...	66.50	47.50	66.50
Hydrate, bbls lb.	...	.32	...	.32	...	.32
Linoleate, liq, drs lb.	.18	.19¼	.18	.19¼	.18	.19¼
solid, precip, bbls lb.	...	.19	...	.19	...	.19
Resinate, fused, bbls lb.	.08¼	.08½	.08¼	.08½	.08¼	.08½
precip, drs lb.	...	.12	...	.12	...	.12
Sulfate, tech, anhyd, 90-95%, 550 lb drs lb.	.08	.08½	.08	.08½	.07	.08½
Mangrove, 55%, 400 lb bbls lbs.	...	...	...	...	...	.04
Bark, African ton	...	35.00	...	35.00	23.00	35.00

Current

Mannitol
Nutgalls Alleppo

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Mannitol, pure cryst, cs, wks lb.	.95	1.00	.95	1.00	.95	1.20
commercial grd, 250 lb bbls lb.	.42	.50	.42	.50	.42	.57
Marble Flour, blk ton	12.00	14.00	12.00	14.00	12.00	14.00
Mercury chloride(Calomel) lb.	...	2.45	...	2.45	1.36	2.57
Mercury metal 76 lb. flasks	180.00	185.00	180.00	185.00	95.00	170.00
Mesityl Oxide, f.o.b. dest., tks lb.	...	.15	...	.15	.10½	.15
drs, c-l lb.	...	.16	...	.16	.11½	.16
drs, lcl lb.	...	.16½	...	.16½	.12	.16½
Meta-nitro-aniline lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls lb.	1.30	1.40	1.30	1.40	1.30	1.55
Meta-phenylene diamine 300 lb bbls lb.	...	.65	...	.65	.80	.84
Meta-toluene-diamine 300 lb bbls lb.	.65	.67	.65	.67	.65	.67
Methanol, denat, grd, drs, c-l frt all'd gal.	...	.45	...	.45	.41	.46
tks, frt all'd gal.	...	.40	...	.40	.35	.40
Pure, drs, c-l, frt all'd' gal.	...	.38	...	.38	...	.38
tks gal.	...	.33	...	.33	...	.33
95%, tks gal.	...	.31	...	.31	...	.31
97%, tks gal.	...	.32	...	.32	...	.32
Methyl Acetate, tech tks, delv lb.	...	.06	...	.06	.06	.06½
55 gal drs, delv lb.	.07	.08	.07	.08	.07	.08
C.P. 97-99%, tks,delv lb.	...	.06¼	...	.06¼	...	.06¼
55 gal drs, delv lb.	.07¼	.07¾	.07¼	.07¾	.07¼	.07¾
Acetone, frt all'd, drs gal. *p*	.41	.44	.41	.44	.30	.44
tks, frt all'd, drs gal. *p*	...	.35	...	.35	.25	.35
Synthetic, frt all'd, east of Rocky M., drs gal. *p*	.38	.41	.38	.41	.38	.41
tks, frt all'd gal.	...	.31½	...	.31½	...	.31½
West of Rocky M., frt all'd, drs gal. *p*	...	.42	...	.42	...	.42
tks, frt all'd gal. *p*	...	.35	...	.35	...	.35
Anthraquinone lb.	...	.83	...	.83	...	.83
Butyl Ketone, tks lb.	...	.10½	...	.10½	...	.10½
Cellulose, 100 lb lots, frt all'd lb.	...	.70	...	.70	...	...
less than 100 lbs. f.o.b. wks lb.	...	.75	...	.75	...	...
Chloride, 90 lb. cyl lb.	.32	.40	.32	.40	.32	.40
Ethyl Ketone, tks,frt all'd lb.	...	.05½	...	.05½	.05	.05½
50 gal drs, frt all'd' c-l lb	.06½	.07	.06½	.07	.06	.07
Formate, drs, frt all'd lb.	...	.39	...	.39	.35	.39
Hexyl, Ketone, pure, drs lb.	...	.60	...	.60	...	.60
Lactate, drs, frt all'd lb.	...	.30	...	.30	...	.30
Mica, dry grd, bgs, wks lb.	...	30.00	...	30.00	...	30.00
Michler's Ketone, kgs lb.	...	2.50	...	2.50	...	2.50
Monoamylamine,c-l,drs,wks lb.	...	.52	...	.52	...	.52
lcl, drs, wks lb.	...	.55	...	.55	...	...
tks, wks lb.	...	.50	...	.50	...	...
Monobutylamine, drs, c-l, wks lb.	...	.50	...	.50	.50	.65
lcl, wks lb.	...	.53	...	.53	...	...
tks, wks lb.	...	.48	...	.48	...	...
Monochlorobenzene, see "C"						
Monoethanolamine, tks, wks lb.	...	.23	...	.23	...	.23
Monoethylamine (100% basis) lcl, drs, f.o.b. wks lb.	...	.65	...	.65	...	...
Monomethylamine, drs, frt all'd, E Mississippi, c-l lb.	...	.65	...	.65	...	.65
Monomethylparamiosulfate, 100 lb drs lb.	3.75	4.00	3.75	4.00	3.75	4.00
Morpholine, drs 55 gal, lcl wks lb.	...	.75	...	.75	...	...
Myrobalans 25%, liq bbls lb.	no prices		no prices		.03¾	.04¼
50% Solid, 50 lb boxes lb.	no prices		no prices		.04¾	.05
J1 bgs ton	...	32.00	...	32.00	24.00	50.00
J2 bgs ton	...	25.00	...	25.00	19.00	41.00
N						
Naphtha, v.m.&p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-wht, tks gal.	...	.27	...	.27	.26	.27
drs, c-l gal.	...	.32	...	.32	.31	.32
Naphthalene, dom, crude bgs. wks lb.	2.50	2.60	2.50	2.60	2.25	2.85
imported, cif, bgs lb.	...	...	...	...	1.50	1.85
Balls, flakes, pks lb.	...	.07½	...	.07½	.06½	.07½
Balls, ref'd, bbls, wks lb.	...	.06¾	...	.06¾	.05¾	.06¾
Flakes, ref'd, bbls, wks lb.	...	.06¾	...	.06¾	.05¾	.06¾
Nickel Carbonate, bbls lb.	.36	.36½	.36	.36½	.36	.37½
Chloride, bbls lb.	.18	.20	.18	.20	.18	.20
Metal ingot lb.	...	.35	...	.35	...	.35
Oxide, 100 lb kgs, NY lb.	.35	.38	.35	.38	.35	.37
Salt, 400 lb bbls, NY lb.	.13	.13½	.13	.13½	.13	.13½
Single, 400 lb bbls, NY lb.	.13	.13½	.13	.13½	.13	.13½
Nicotine, 40%, drs, sulfate, 55 lb drs lb.	...	.70	...	.70	.70	.76
Nitre Cake, blk ton	...	16.00	...	16.00	...	16.00
Nitrobenzene redistilled,1000 lb drs, wks lb.	.08	.10	.08	.10	.08	.10
tks lb.	...	.07	...	.07	.07	.07½
Nitrocellulose, c-l, lcl, wks lb.	.22	.29	.22	.29	.22	.29
Nitrogen Sol. 45½% ammon, f.o.b. Atlantic & Gulf ports, tks, unit ton, N basis	...	1.2158	...	1.2158		1.2158
Nitrogenous Mat'l, bags imp unit	...	2.60	...	2.60	2.25	2.85
dom, Eastern wks unit	...	2.90	...	2.90	2.30	3.00
dom. Western wks unit	...	2.00	...	2.00	1.90	2.25
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Alleppo, bgs lb.	.29	.30	.29	.30	.22	.23

a Country is divided in 4 zones, prices varying by zone; *b* Country is divided into 4 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila., or N. Y.

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Oak Bark Extract
Phenylhydrazine Hydrochloride

Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Oak Bark Extract, 25%, bbls lb.	.03⅛	.03⅜	.03⅛	.03⅜	.03⅛	.03½
tks lb.	...	.02¾	...	.02¾	...	.02¾
Octyl Acetate, tks, wks lb.	...	.15	...	.15	.15	.17
Orange-Mineral, 1100 lb cks NY lb.	...	.10¾	...	.10¾	.10¼	.10¾
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	.70	.74	.70	.74	.70	.74
Orthochlorophenol, drs lb.	...	.32	...	.32	...	.32
Orthocresol, 30.4°, drs, wks lb.	.16	.16½	.16	.16½	.14½	.17½
Orthodichlorobenzene, 1000 lb drs lb.	.06	.07	.06	.07	.06	.07
Orthonitrochlorobenzene, 1200 lb drs, wks lb.	.15	.18	.15	.18	.15	.18
Orthonitroparachlorphenol, tins lb.	...	.75	...	.75	...	.75
Orthonitrophenol, 350 lb drs lb.	.85	.90	.85	.90	.85	.90
Orthonitrotoluene, 1000 lb drs, wks lb.	...	.09	...	.09	.08	.10
Orthotoluidine, 350 lb bbls, lcl lb.	...	.19	...	.19	.16	.19
Osage Orange, cryst, bbls lb.	...	.21	...	.21	.17	.25
51° liquid lb.	...	.10	...	.10	.07	.09
P						
Paraffin, rfd, 200 lb bgs 122-127° M P lb.	.066	.0675	.066	.0675	.03¾	.06¾
128-132° M P lb.	.068	.0705	.068	.0705	.04	.0705
133-137° M P lb.	.073	.0755	.073	.0755	.0465	.0755
Para aldehyde, 99%, tech, 110-55 gal drs, wks lb.	.10	.11¼	.10	.11¼	.10	.16*
Aminoacetanilid, 100 lb kgs lb.	...	.85	...	.85	...	.85
Aminohydrochloride, 100 lb kgs lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	1.05	...	1.05	...	1.05
Chlorophenol, drs lb.	...	.32	...	.32	.30	.45
Dichlorobenzene 200 lb drs, wks lb.	.11	.12	.11	.12	.11	.12
Formaldehyde, drs, wks lb.	.34	.35	.34	.35	.34	.35
Nitroacetanilid, 300 lb bbls lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wk lb.	...	.47	...	.47	.45	.47
Nitrochlorobenzene, 1200 lb drs, wks lb.	.15	.16	.15	.16	.15	.16
Nitro-orthotoluidine, 300 lb bbls lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	.35	.37	.35	.37	.35	.37
Nitrosodimethylaniline, 120 lb bbls lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	...	.30	...	.30	.30	.35
Phenylenediamine, 350 lb bbls lb.	1.25	1.30	1.25	1.30	1.25	1.30
Toluenesulfonamide, 175 lb bbls lb.	.70	.75	.70	.75	.70	.75
tks, wks lb.	...	.31	...	.31	...	.31
Toluenesulfonchloride, 410 lb bbls, wks lb.	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks lb.	.48	.50	.48	.50	.48	.58
Paris Green, dealers, drs lb.	.23	.26	.23	.26	.23	.26
Pentane, normal, 28-38° C, group, 3 tks gal.	...	.08½	...	.08½	...	.08½
drs, group 3 gal.	.11½	.16	.11½	.16	.11½	.16
Perchlorethylene, 100 lb drs, frt all'd lb.	.08	.08¾	.08	.08¾	.08	.10½
Petrolatum, dark amber, bbls. lb.	.04	.05	.04	.05	.02⅝	.05
White, lily, bbls lb.	.07	.08½	.07	.08½	.05¼	.08½
White, snow, bbls lb.	.08	.09½	.08	.09½	.06¼	.09½
Petroleum Ether, 30-60°, group 3, tks gal.	...	.13½	...	.13½	.13	.13½
drs, group 3 gal.	.14½	.25½	.14½	.25½	.14	.25½
PETROLEUM SOLVENTS AND DILUENTS						
Cleaners naphthas, group 3, tks, wks gal.	.06⅞	.07	.06⅞	.07	.06⅜	.07
East Coast, tks wks gal.	.09	.10½	.09	.10½	.09	.10
Hydrogenated, naphthas, frt all'd East, tks gal.	...	.16	...	.16	...	.16
No. 2, tks gal.	...	.18	...	.18	...	.18
No. 3, tks gal.	...	.16	...	.16	...	.16
No. 4, tks gal.	...	.18	...	.18	...	.18
Lacquer diluents, tks, East Coast gal.	.09½	.10	.09½	.10	.09	.12½
Group 3, tks gal.	...	.07⅞	...	.07⅞	.07⅜	.08
Naphtha, V.M.P., East tks, wks gal.	...	.09½	...	.09½	.09	.10
Group 3, tks, wks gal.	.06⅞	.07	.06⅞	.07	.06⅜	.07
Petroleum thinner, 43-47, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½	.10
Group 3, tks, wks gal.	.05⅞	.06	.05⅞	.06	.05⅜	.06
Rubber Solvents, stand grd, East, tks, wks gal.	...	.09½	...	.09½	.09	.10
Group 3, tks, wks gal.	.06⅞	.07	.06⅞	.07	.06⅜	.07
Stoddard Solvents, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½	.10
Group 3, wks gal.	.06⅜	.06½	.06⅜	.06½	.05⅞	.06½
Phenol, 250-100 lb drs lb.	.13	.14¾	.13	.14¾	.13	.15½
tks, wks lb.	...	.12	...	.12	.12	.13½
Phenyl-Alpha-Naphthylamine, 100 lb kgs lb.	...	1.35	...	1.35	...	1.35
Phenyl Chloride, drs lb.	...	.17	...	.17	...	.17
Phenylhydrazine Hydrochloride, com lb.	...	1.50	...	1.50	...	1.50

* These prices were on a delivered basis.

Current

Phloroglucinol Rosins

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Phloroglucinol, tech, tins	lb.	15.00	15.00	16.50	15.00	16.50
CP, tons	lb.	20.00	20.00	22.00	20.00	22.00
Phosphate Rock, f.o.b. mines						
Florida Pebble, 68% basis	ton	...	...	1.85	...	1.85
70% basis	ton	...	...	2.35	...	2.35
72% basis	ton	...	...	2.85	...	2.85
75-74% basis	ton	...	...	3.85	...	3.85
75% basis	ton	...	...	5.50	...	5.50
Tennessee, 72% basis	ton	...	...	4.50	...	4.50
Phosphorus Oxychloride 175 lb cyl	lb.	.16	.16	.20	.16	.20
Red, 110 lb cases	lb.	.40	.40	.44	.40	.44
Sesquisulfide, 100 lb cs	lb.	.38	.38	.44	.38	.44
Trichloride, cyl	lb.	.15	.15	.18	.15	.18
Yellow, 110 lb cs, wks	lb.	.18	.18	.20	.24	.30
Phthalic Anhydride, 100 lb drs, wks	lb.	...	.14½	...	.14½	... .14½
Pine Oil, 55 gal drs or bbls						
Destructive dist	lb.	.53	.53	.56	.46	.48
Steam dist wat wh bbls	gal.	...	...	.59	...	.59
tks	gal.	...	...	.54	...	.54
Pitch Hardwood, wks	ton	23.75	23.75	24.00	23.75	24.00
Coaltar, bbl, wks	ton	...	...	19.00	...	19.00
Burgundy, dom, bbls, wks	lb.	.05½	.05½	.06½	.05½	.06½
Imported	lb.	.15	.15	.16	.15	.16
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls	bbl.	6.00	6.00	6.25	6.00	6.25
Platinum, ref'd	oz.	38.00	38.00	40.00	32.00	40.00
POTASH						
Potash, Caustic, wks, sol	lb.	.06¼	.06¼	.06½	.06¼	.06½
flake	lb.	.07	.07	.07⅜	.07	.07⅜
liquid, tks	lb.	...	...	.02⅞	...	.02⅞
Manure Salts, imported 30% basis, blk	unit	...	...	.58½	...	.58½
Potassium Abietate, bbls	lb	...	...	.09	...	.09
Acetate, tech, bbls, delv	lb.	...	...	.26	...	.26
Bicarbonate, USP, 320 lb bbls	lb.	...	...	.18	...	.18
Bichromate Crystals, 725 lb cks*	lb.	.08¾	.08¾	.09¼	.08¾	.09¼
Binoxalate, 30 lb bbls	lb.	...	...	.23	...	.23
Bisulfate, 100 lb kgs	lb.	.15½	.15½	.18	.15½	.18
Carbonate, 80-85% calc 800 lb cks	lb.	.06½	.06½	.07	.06½	.07
liquid, tks	lb.	...	...	.02⅞	...	.02⅞
drs, wks	lb.	.03	.03	.03½	.03	.03½
Chlorate crys, 112 lb kgs, wks	lb.	.10½	.10½	.13	.09¼	.13
gran, kgs	lb.	.12	.12	.14½	.12	.14½
powd, kgs	lb.	.10	.10	.12½	.08½	.12½
Chloride, crys, bbls	lb.	.04	.04	.04¾	.04	.04¾
Chromate, kgs	lb.	.24	.24	.27	.19	.28
Cyanide, 110 lb cases	lb.	no prices	no prices		.50	.55
Iodide, 250 lb bbls	lb.	...	...	1.35	1.13	1.35
Metabisulfite, 300 lb bbls	lb.	.18	.18	nom.	.11	.18
Muriate, bgs, dom, blk	unit	...	...	.53½	...	.53½
Oxalate, bbls	lb.	.25	.25	.26	.25	.26
Perchlorate, kgs, wks	lb.	.09½	.09½	.11	.09	.10½
Permanganate, USP, crys, 500 & 1000 lb drs, wks	lb.	.18½	.18½	.19½	.18½	.19½
Prussiate, red, bbls	lb.	.38	.38	.45	.30½	.45
Yellow, bbls	lb.	.15	.15	.16	.14	.16
Sulfate, 90% basis, bgs	ton	...	...	36.25	36.25	38.00
Titanium Oxalate, 200 lb bbls	lb.	.40	.40	.45	.35	.45
Pot & Mag Sulfate, 48% basis bgs	ton	...	...	24.75	24.75	25.75
Propane, group 3, tks	lb.	.03	.03	.04⅜	.03	.04⅜
Putty, com'l, tubs	100 lb.	...	...	6.00	3.00	6.00
Linseed Oil, kgs	100 lb.	...	...	4.50	...	4.50
Pyrethrum, conc liq: 2.4% pyrethrins, drs, frt all'd	gal.	7.15	7.15	7.50	5.75	7.50
3.6% pyrethrins, drs, frt all'd	gal.	10.65	10.65	11.00	8.45	11.00
Flowers, coarse, Japan, bgs	lb.	.33	.33	.36	.26	.36
Fine powd, bbls	lb.	.35	.35	.37	.27	.37
Pyridine, denat, 50 gal drs	gal.	...	...	1.71	1.63	1.71
Refined, drs	lb.	...	...	.51	.50	.51
Pyrites, Spanish cif Atlantic ports, blk	unit	.12	.13	.12	.13	.12 .13
Pyrocatechin, CP, drs, tins	lb.	2.15	2.15	2.75	2.15	2.75
Q						
Quebracho, 35% liq tks	lb.	...	...	.03¼	...	.03¼ .02⅞ .03⅜
450 lb bbls, c-l	lb.	...	...	.03¾	...	.03¾ .04 .04⅛
Solid, 63%, 100 lb bales cif	lb.	...	...	.04½	...	.04½ .04 .04½
Clarified, 64% bales	lb.	...	...	.04¾	...	.04¾ .04¼ .04¾
Quercitron, 51 deg liq, 450 lb bbls	lb.	.08½	.08½	.09½	.08½	.09½ .07½ .08½
Solid, drs	lb.	.10	.10	.16½	.10	.16½ .10 .12
R						
R Salt, 250 lb bbls, wks	lb.	...	...	.55	...	.55 ... .55
Resorcinol, tech, cans	lb.	.75	.75	.80	.75	.80 .75 .80
Rochelle Salt, cryst	lb.	.22¼	.22¼	.23¼	.22¼	.23¼ .17¾ .21¾
Powd, bbls	lb.	.21¾	.21¾	.22¼	.21¾	.22¼ .16¾ .20¼
Rosin Oil, bbls, first run	gal.	...	...	.50	...	.50 .45 .47
Second run	gal.	...	...	.52	...	.52 .47 .49
Third run, drs	gal.	...	...	.56	...	.56 .51 .53
Rosins 600 lb bbls, 280 lb unit ex. yard NY:***						
B		...	...	5.90	...	5.90 4.60 5.45
D		...	...	6.15	...	6.15 4.95 5.70

* Spot price is ⅛c higher; *** Jan. 31.

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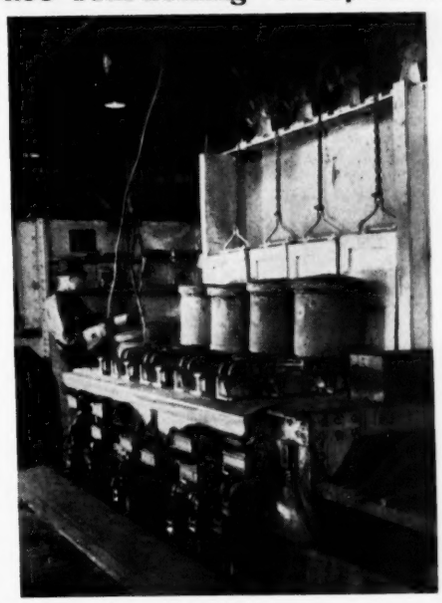
BARIUM CARBONATE
for
Case Hardening Compounds



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CINCHOPHEN
CINCHOPHEN SODIUM
ETHYL GLYCOCOLL HYDROCHLORIDE
GLYCYL GLYCOCOLL HYDROCHLORIDE
8—HYDROXYQUINOLIN
ISOBUTYL PARA-AMINOBENZOATE
NEO CINCHOPHEN
OXYQUINOLIN BENZOATE
OXYQUINOLIN CITRATE
OXYQUINOLIN SULPHATE
POTASSIUM OXYQUINOLIN SULPHATE
PHENOBARBITAL
PHENOBARBITAL CALCIUM
PHENOBARBITAL SODIUM
PROPYL PARA-AMINOBENZOATE
TETRA-IODO-PHENOLPHTHALEIN SODIUM
THEOPHYLLINE
BENZALDEHYDE
BENZYL ALCOHOL
BROMSTYROL
CINNAMIC ACID
DIACETYL
METHYL CINNAMATE
METHYL PHENYL ACETATE
PHENYL ACETIC ACID
BENZALDEHYDE
BENZYL ALCOHOL
BENZYL CHLORIDE
BENZYL CYANIDE
DIETHYL OXALATE
DIMETHYL UREA
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CYANO ACETIC ACID
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212 East 42nd Street • New York

Prices

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Rosins (continued)						
E		6.50	6.25	6.50	5.20	6.40
F		6.60	6.30	6.60	5.50	6.75
G		6.75	6.50	6.75	5.75	7.00
H		6.80	6.70	6.80	5.75	7.10
I		6.90	6.75	6.90	5.77½	7.20
K		6.90	6.85	6.90	5.80	7.20
M		6.95	...	6.95	5.90	7.25
N		6.95	...	6.95	6.75	7.40
WG		7.05	...	7.05	6.95	7.70
WW		7.60	...	7.60	7.45	8.50
Rosins, Gum, Savannah (280 lb unit):**						
B		4.50	4.00	4.50	3.25	4.00
D		4.75	4.10	4.75	3.55	4.30
E		5.10	4.82½	5.10	3.80	5.00
F		5.20	4.90	5.20	4.00	5.35
G		5.35	5.10	5.35	4.40	5.70
H		5.40	5.27½	5.40	4.40	5.70
I		5.50	5.35	5.50	4.40	5.80
K		5.60	5.45	5.60	4.40	5.80
M		5.55	...	5.55	4.40	5.85
N		5.55	...	5.55	5.10	6.00
WG		5.65	...	5.65	5.60	6.30
WW		6.20	...	6.20	5.60	7.10
X		6.20	...	6.20	6.05	7.10
Rosin, Wood, c-l, FF grade, NY	4.60	6.75	4.60	6.75	5.35	6.80
Rotten Stone, bgs mines ton	25.50	37.50	25.50	37.50	22.50	37.50
Imported, lump, bbls...lb.	...	.14	...	.14	...	.14
Powdered, bbls .....lb.	.08½	.10	.08½	.10	.08½	.10
S						
Sago Flour, 150 lb bgs..lb.	.04	.04½	.04	.04½	.02½	.04½
Sal Soda, bbls wks...100 lb.	...	1.20	...	1.20	...	1.20
Salt Cake, 94-96%, c-l, bulk wks .....ton	...	17.00	...	17.00	19.00	25.00
Chrome, c-l, wks .....ton	11.00	12.00	11.00	12.00	11.00	12.00
Saltpetre, gran, 450-500 lb bbls .....lb.	...	.071	...	.071	.06½	.069
Cryst, bbls .....lb.	...	.081	...	.081	.07½	.0865
Powd, bbls .....lb.	...	.081	...	.081	.07½	.079
Satin, White, pulp, 550 lb bbls .....lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Schaeffer's Salt, kgs .....lb.	.46	.48	.46	.48	.46	.48
Shellac, Bone dry, bbls..lb. *r*	.25	.26	.25	.26	.18	.26
Garnet, bgs .....lb.	.19	.20	.19	.20	.12½	.20
Superfine bgs .....lb. *s*	.18	.19	.18	.19	.10	.21
T. N., bgs .....lb. *s*	.17	.18	.17	.18	.09½	.20
Silver Nitrate, vials .....oz.	...	.26⅞	...	.26⅞	.26⅞	.33½
Slate Flour, bgs, wks....ton	9.00	10.00	9.00	10.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks .....100 lb.	...	1.10	...	1.10	...	1.10
58% light, bgs .....100 lb.	...	1.08	...	1.08	...	1.08
blk .....100 lb.	...	.90	...	.90	...	.90
paper bgs .....100 lb.	...	1.05	...	1.05	...	1.05
bbls .....100 lbs.	...	1.35	...	1.35	...	1.35
Caustic, 76% grnd & flake, drs .....100 lb.	...	2.70	...	2.70	...	2.70
76% solid, drs.....100 lb.	...	2.30	...	2.30	...	2.30
Liquid sellers, tks ..100 lb.	...	1.97½	...	1.97½	...	1.97½
Sodium Abietate, drs ....lb.	...	.11	...	.11	...	.11
Acetate, 60% tech, gran, powd, flake, 450 lb bbls wks .....lb.	.04	.05	.04	.05	.04	.05
anhyd, drs, delv .....lb.	...	.08¼	...	.08¼	...	.08¼
Alginate, drs .....lb.	.71	.95	.71	.95	.70	.95
Antimoniate, bbls .....lb.	.14½	.15	.14½	.15	.11½	.16
Arsenate, drs .....lb.	.08	.08½	.08	.08½	.08	.08½
Arsenite, liq, drs ....gal.	...	.35	...	.35	.30	.35
Dry, gray, drs, wks..lb.	.07½	.09½	.07½	.09½	.07½	.09½
Benzoate, USP kgs ...lb.	.46	.48	.46	.48	.46	.48
Bicarb, powd, 400 lb bbl, wks .....100 lb.	...	1.85	...	1.85	...	1.85
Bichromate, 500 lb cks, wks* .....lb.	.06¾	.07¼	.06¾	.07¼	.06¾	.07¼
Bisulfite, 500 lb bbls, wks lb.	.03	.031	.03	.031	.031	.036
35-40% sol bbls,wks100 lb.	1.40	1.80	1.40	1.80	1.40	1.80
Chlorate, bgs, wks .....lb.	.06¼	.07½	.06¼	.07½	.06¼	.07½
Cyanide, 96-98%, 100 & 250 lb drs, wks .....lb.	.14	.15	.14	.15	.14	.15
Diacetate, 33-35% acid, bbls, lcl, delv .....lb.	...	.09	...	.09	...	.09
Fluoride, white 90%, 300 lb bbls, wks .....lb.	.07	.08	.07	.08	.07	.08¾
Hydrosulfite, 200 lb bbls, f.o.b. wks .....lb.	.16	.17	.16	.17	.16	.17
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	...	2.80	...	2.80	...	2.80
Tech, reg cryst, 375 lb bbls, wks .....100 lb.	2.45	2.80	2.45	2.80	2.45	2.80
Iodide, jars .....lb.	...	2.30	...	2.30	2.10	2.30
Metal, drs, 280 lbs ....lb.	...	.19	...	.19	...	.19
Metanilate, 150 lb bbls..lb.	.41	.42	.41	.42	.41	.42
Metasilicate, gran, c-l, wks .....100 lb.	...	2.35	...	2.35	2.20	2.35
cryst, drs, c-l, wks 100 lb.	..	3.05	...	3.05	2.90	3.05
Monohydrated, bbls ...lb.	...	.023	...	.023	...	.023
Naphthenate, drs .....lb.	.12	.19	.12	.19	.12	.19
Naphthionate, 300 lb bbl lb.	...	.50	...	.50	.50	.54
Nitrate, 92% crude, 200 lb bgs, c-l, NY .....ton	...	28.30	...	28.30	...	28.30
100 lb bgs .....ton	...	29.00	...	29.00	...	29.00
Bulk .....ton	...	27.00	...	27.00	...	27.00
Nitrite, 500 lb bbls ....lb.	.06¾	.11½	.06¾	.11½	.06¾	.11½

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case; *s* T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y. *Spot price is ⅛c higher.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Sodium (continued):						
Orthochlorotoluene, sulfonate, 175 lb bbls, wks	lb.	.25	.27	.25	.27	.25	.27
Orthosilicate, 300 lb drs, c-l	lb.	...	3.00	...	3.00	...	3.00
Perborate, drs, 400 lb	lb.	.14¾	.15¼	.14¾	.15¼	.14¾	.15¼
Peroxide, bbls, 400 lb	lb.	...	.17	...	.17	...	.17
Phosphate, di-sodium, tech, 310 lb bbls, wks	100 lb.	...	2.30	...	2.30	2.05	2.30
bgs, wks	100 lb.	...	2.10	...	2.10	1.85	2.10
Tri-sodium, tech, 325 lb. bbls, wks	100 lb.	...	2.45	...	2.45	2.20	2.45
bgs, wks	100 lb.	...	2.25	...	2.25	2.00	2.25
Picramate, 160 lb kgs	lb.	.65	.67	.65	.67	.65	.67
Prussiate, Yellow, 350 lb. bbls, wks	lb.	.09½	.09¾	.09½	.09¾	.09½	.10¾
Pyrophosphate, anhyd, 100 lb bbls f.o.b. wks frt eq	lb.	...	.0530	...	.0530	...	.0530
Sesquisilicate, drs, c-l, wks	100 lb.	...	2.90	...	2.90	2.80	2.90
Silicate, 60°, 55 gal drs, wks	100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40°, 55 gal drs, wks	100 lb	...	.80	...	.80	...	.80
tks, wks	100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY	lb.	no prices		no prices		.03½	.04¾
Stannate, 100 lb drs	lb.	no prices		no prices		.30	.35
Stearate, bbls	lb.	.19	.24	.19	.24	.19	.24
Sulfanilate, 400 lb bbls	lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bgs* c-l, wks	100 lb. ‡	1.45	1.90	1.45	1.90	1.45	1.90
Sulfide, 80% cryst, 440 lb. bbls, wks	lb.	...	.02½	...	.02½	.02¼	.02½
Solid, 650 lb drs, c-l, wks	lb.	...	.03¼	...	.03¼	.03	.03½
Sulfite, cryst, 400 lb bbls, wks	lb.	.023	.02½	.023	.02½	.023	.02½
Sulfocyanide, drs	lb.	.28	.47	.28	.47	.28	.47
Sulforicinoleate, bbls	lb.	...	.12	...	.12	...	.12
Supersilicate (see sodium sesquisilicate)							
Tungstate, tech, crys, kgs	lb.	no prices		no prices		1.05	1.10
Sorbitol, com, solut, wks c-l, drs, wks	lb.	...	.15½	...	.15½	...	.15½
Spruce, Extract, ord, tks	lb.	...	.01⅛	...	.01⅛	...	.01⅛
Ordinary, bbls	lb.	...	.01⅝	...	.01⅝	...	.01⅝
Super spruce ext, tks	lb.	...	.01¾	...	.01¾	...	.01¾
Super spruce ext, bbls	lb.	...	.01⅞	...	.01⅞	...	.01⅞
Super spruce ext. powd, bgs	lb.	...	.04	...	.04	...	.04
Starch, Pearl, 140 lb bgs	100 lb.	...	2.50	...	2.50	2.40	2.85
Powd, 140 lb bgs	100 lb.	...	2.60	...	2.60	2.50	2.90
Potato, 200 lb bgs	lb.	.06¼		.06¼		.04	.06¾
Imp, bgs	lb.	...	.06½	...	.06½	.05	.06½
Rice, 200 lb bbls	lb.	...	.07¼	...	.07¼	.06¼	.07¼
Sweet Potato, 240 lb bbls, f.o.b. plant	100 lb.	5.50	6.00	5.50	6.00	5.50	7.50
Wheat, thick, bgs	lb.	...	.05½	...	.05½	.05	.05½
Strontium, carbonate, 600 lb bbls, wks	lb.	...	.23	.22	.23	.16	.24
Nitrate, 600 lb bbls, NY	lb.	.07¾	.08¼	.07¾	.08¼	.07¾	.08¼
Sucrose, octa-acetate, den, grd, bbls, wks	lb.	...	.45	...	.45	...	.45
tech, bbls, wks	lb.	...	.40	...	.40	...	.40
Sulfur, crude, f.o.b. mines	ton	...	16.00	...	16.00	...	16.00
Flour, com'l, bgs	100 lb.	1.65	2.35	1.65	2.35	1.65	2.35
bbls	100 lb.	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs	100 lb.	2.20	2.80	2.20	2.80	2.20	2.80
bbls	100 lb.	2.55	3.15	2.55	3.15	2.55	3.15
Extra fine, bgs	100 lb.	2.85	3.00	2.85	3.00	2.85	3.00
Superfine, bgs	100 lb.	2.65	2.80	2.65	2.80	2.65	2.80
bbls	100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs	100 lb.	3.00	3.75	3.00	3.75	3.00	3.75
bbls	100 lb.	3.35	4.10	3.35	4.10	3.35	4.10
Roll, bgs	100 lb.	2.35	3.10	2.35	3.10	2.35	3.10
bbls	100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Sulfur Chloride, 700 lb drs, wks	lb.	.03	.04	.03	.04	.03	.04
Sulfur Dioxide, 150 lb cyl	lb.	.07	.09	.07	.09	.07	.09
Multiple units, wks	lb.	.04½	.07	.04½	.07	.04½	.07
tks, wks	lb.	.04	.05	.04	.05	.04	.05
Refrigeration, cyl, wks	lb.	.16	.17	.16	.17	.16	.17
Multiple units, wks	lb.	.07½	.10	.07½	.10	.07½	.10
Sulfuryl Chloride	lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd	ton	...	98.00	...	98.00	65.50	85.00
Extract, 42°, bbls	lb.	...	.06	...	.06	.05¼	.06¼
Superphosphate, 16% bulk, wks	ton	...	9.00	...	9.00	8.00	9.00
Run of pile	ton	...	8.50	...	8.50	7.50	8.50
Triple, 40-48%, a.p.a. bulk, wks, Balt. unit	ton	...	.70	...	.70	...	.70
Talc, Crude, 100 lb bgs, NY	ton	14.00	15.00	14.00	15.00	13.00	15.00
Ref'd 100 lb bgs, NY	ton	14.00	16.00	14.00	16.00	14.00	16.00
French, 220 lb bgs, NY	ton	23.00	30.00	23.00	30.00	23.00	30.00
Ref'd, white bgs, NY	ton	45.00	60.00	45.00	60.00	45.00	60.00
Italian, 220 lb bgs to arr	ton	64.00	70.00	64.00	70.00	60.00	70.00
Ref'd', white bgs, NY	ton	65.00	70.00	65.00	70.00	65.00	70.00
Tankage, Grd, NY	unit ¤	...	3.25	...	3.25	2.75	3.25
Ungrd	unit ¤	...	3.25	...	3.25	2.75	5.00
Fert grade, f.o.b. Chg	unit ¤	...	3.50	...	3.50	2.50	4.50
South American cif	unit ¤	...	3.50	...	3.50	3.00	4.00
Tapioca Flour, high grade, bgs	lb.	.02¾	.04½	.02¾	.04½	.01¾	.05½
Tar Acid Oil, 15%, drs	gal.	.22	.24	.22	.24	.21	.24
25% drs	gal.	.26	.28	.26	.28	.25	.28
Tar, pine, delv, drs	gal.	.26	.27	.26	.27	.25	.27
tks, delv, E. cities	gal.	...	.21	...	.21	.20	.21
Tartar Emetic, tech, bbls	lb.	.34¾	.35	.34¾	.35	.27¾	.35
USP, bbls	lb.	...	.40	...	.40	.33	.40

‡ Bags 15c lower; ¤ + 10; * Bbls. are 20c higher.

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Ray Schlotterer
41 Park Row
New York City

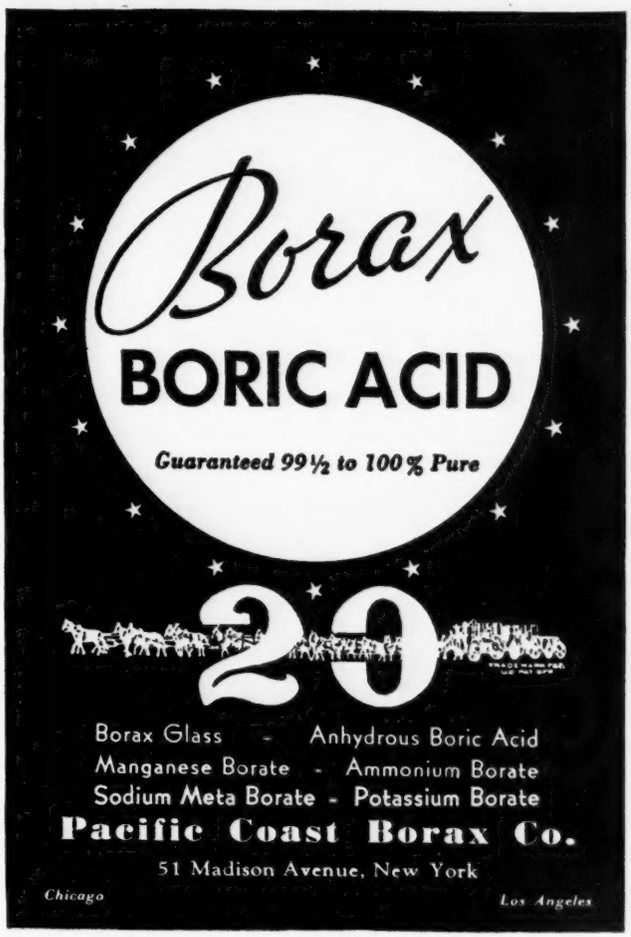
	Current Market		1940 Low	1940 High	1939 Low	1939 High
Terpineol, den grade, drs lb.	...	.17	...	.17	...	.17
Tetrachlorethane, 650 lb drs lb.	.08	.08½	.08	.08½	.08	.08½
Tetrachlorethylene, drs, tech lb.	...	.09½	...	.09½	...	.09½
Tetralene 50 gal drs, wks lb.	.12	.13	.12	.13	.12	.13
Thiocarbanilid, 170 lb bbls lb.	.20	.25	.20	.25	.20	.25
Tin, crystals, 500 lb bbls, wks lb.	...	.36	...	.36	.35½	.39
Metal, NY lb.	...	.45½	...	.45½	.45½	.60
Oxide, 300 lb bbls, wks lb.	.51	.53	.51	.53	.50	.54
Tetrachloride, 100 lb drs, wks lb.	...	.23	.23	.24¾	.23	.32
Titanium Dioxide, 300 lb bbls lb.	.13¼	.16	.13¼	.16	.13¼	.16
Barium Pigment, bbls lb.	.05½	.06½	.05½	.06½	.05⅝	.06½
Calcium Pigment, bbls lb.	...	.05	...	.05	.05⅜	.06
Toluidine, mixed, 900 lb drs, wks lb.	.26	.27	.26	.27	.26	.27
Toluol, 110 gal drs, wks gal.	...	.27	...	.27	...	.27
8000 gal tks, frt all'd gal.	...	.22	...	.22	...	.22
Toner Lithol, red, bbls lb.	.55	.60	.55	.60	.55	.80
Para, red, bbls lb.	.70	.75	.70	.75	.70	.80
Toluidine, bgs lb.	...	1.35	...	1.35	...	1.35
Triacetin, 50 gal drs, wks, lb.	...	.26	...	.26	...	.26
Triamyl Borate, lcl, drs, wks lb.	...	.27	...	.27	...	.27
Triamylamine, c-l, drs, wks lb.	...	.77	...	.77	.77	1.25
lcl, wks, drs lb.	...	.80	...	.80	...	...
tks, wks lb.	...	.75	...	.75	...	...
Tributylamine, lcl, drs, wks lb.	...	.70	...	.70	...	.70
c-l, drs, wks lb.	...	.67	...	.67	...	...
tks, wks lb.	...	.65	...	.65	...	...
Tributyl citrate, drs, frt all'd lb.	...	.35	...	.35	.35	.45
Tributyl Phosphate, frt all'd lb.	...	.42	...	.42	...	.42
Trichlorethylene, 600 lb drs, frt all'd E. Rocky Mts lb.	.08	.08¾	.08	.08¾	.08	.09½
Tricresyl phosphate, tech, drs, lb.	.22	.36½	.22	.36½	.22	.37½
Triethanolamine, 50 gal drs wks lb.	.21	.22	.21	.22	.21	.22
tks, wks lb.	...	.20	...	.20	...	.20
Triethylamine, lcl, drs, f.o.b. wks lb.	...	1.05	...	1.05	...	...
Triethylene glycol, drs, wks lb.	...	.26	...	.26	...	.26
Trihydroxyethylamine Oleate, bbls lb.	...	.30	...	.30	...	.30
Stearate bbls lb.	...	.30	...	.30	...	.30
Trimethyl Phosphate, drs, lcl, f.o.b. dest lb.	...	.50	...	.50	...	.50
Trimethylamine, c-l, drs, frt all'd E. Mississippi lb.	...	1.00	...	1.00	...	1.00
Triphenylguanidine, lb.	.58	.60	.58	.60	.58	.60
Triphenyl Phosphate, drs lb.	...	.38	...	.38	...	.38
Trinoli, airfloated, bgs, wks ton	26.00	30.00	26.00	30.00	26.00	30.00
Turpentine (Spirits), c-l, NY dock, bbls gal.	...	.40**	.33¾	.40**	.29	.35
Savannah, bbls gal.	...	.34*	.27¾	.34*	.23½	.29
Jacksonville, bbls gal.	...	.26*	...	.26*	23½	.26¾
Wood Steam dist, drs, c-l, NY gal.	...	.34½	.34	.34½	.242	.34
Wood, dest dist, c-l, drs, delv E. cities gal.	.23	.25	.23	.25	.22	.25
U						
Urea, pure 112 lb cases lb.	.14½	.15½	.14½	.15½	.14½	.15½
Fert grade, bgs, c. i. f. S.A. points ton	95.00	110.00	95.00	110.00	95 00	110.00
Dom f.o.b., wks ton	95.00	101.00	95.00	101.00	95.00	101.00
Urea Ammonia, liq., nitrogen basis ton	...	121.58	..	121.58	...	...
V						
Valonia beard, 42%, tannin bgs ton	54.00	nom.	54.00	nom.	45.00	57.00
Cups, 32% tannin bgs ton	33.00	37.00	33.00	37.00	27.00	39.00
Extract, powd, 63% lb.	.0565	.06	.0565	.06	.05	.06
Vanillin, ex eugenol, 25 lb tins, 2000 lb lots lb.	...	2.60	...	2.60	2.20	2.60
Ex-guaiacol lb.	...	2.50	...	2.50	2.10	2.50
Ex-lignin lb.	...	2.50	...	2.50	2.10	2.50
Vermilion, English, kgs lb.	...	2.76	...	2.76	1.50	2.97
W						
Wattle Bark, bgs ton	37.50	38.75	36.50	38.75	34.50	40.00
Extract, 60°, tks, bbls lb.	...	.04¼	...	.04¼	.04	.05½
Wax, Bayberry, bgs lb.	.25	.26	.25	.30	.16⅞	.39
Bees, bleached, white 500 lb slabs, cases lb.	...	.38	...	.38	.33	.40½
Yellow, African, bgs lb.	.27	.28	.27	.28	.18½	.30
Brazilian, bgs lb.	.27	.29	.27	.29	.21	.33
Refined, 500 lb slabs, cases lb.	.31	.36	.31	.36	.25½	.36
Candelilla, bgs lb.	.18	.19	.18	.19	.15¼	.19
Carnauba, No. 1, yellow, bgs lb.	.69	.71	.69	.71	.36¾	.78
No. 2, yellow, bgs lb.	.68	.69	.68	.69	.35¾	.45
No. 2, N. C., bgs lb.	.46	.47	.46	.47	.34	.41
No. 3, Chalky, bgs lb.	.43	.45	.43	.45	.27½	.46
No. 3, N. C., bgs lb.	.47	.49	.47	.49	.28¾	.49
Ceresin, dom, bgs lb.	.11½	.15	.11½	.15	.08½	.15
Japan, 224 lb cases lb.	.16	.16½	.16	.16½	.09¾	.18
Montan, crude, bgs lb.	no prices		no prices		.11	.11¼
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.23	.24	.23	.25	.18	.25
Cakes, cases lb.	.24	.25	.24	.25	.19	.26
Whiting, chalk, com 200 lb bgs, c-l, wks ton	12.00	14.00	12.00	14.00	12.00	14.00
Gilders, bgs, c-l, wks ton	...	15.00	...	15.00	...	15.00
Wood Flour, c-l, bgs ton	20.00	30.00	20.00	30.00	20.00	30.00
Xylol, frt all'd, East 10° tks, wks gal.	...	.30	...	.30	.29	.30
Com'l tks, wks, frt all'd, gal	...	.27	...	.27	.26	.27
Xylidine, mixed crude, drs lb.	.35	.36	.35	.36	.35	.36
Zein, bgs, 1000 lb lots, wks lb.	...	.20	...	.20	...	...

* Jan. 31. ** Jan. 31.

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Zinc Acetate, tech, bbls, lcl, delv	lb.	.15	.15	.16	.15	.21
Arsenite, bgs, frt all'd	lb.	.12	.12	.12½	.12	.13
Carbonate tech, bbls, NY	lb.	.14	.14	.15	.14	.15
Chloride fused, 600 lb drs, wks	lb.	.04¼	.04¼	.046	.04¼	.046
Gran, 500 lb drs, wks	lb.	.05	.05	.05¼	.05	.05¼
Soln 50%, tks, wks 100	lb.	...	2.25	...	2.25	... 2.25
Cyanide, 100 lb drs	lb.	...	.33	...	.33	... .33
Dust, 500 lb bbls, c-l, delv	lb.	...	.07½	...	.07½	.06½ .08½
Metal, high grade slabs, c-l, NY	100 lb.	...	5.90	...	5.90	4.84 6.40
E. St. Louis	100 lb.		5.50	4.60	5.50	4.60 6.00
Oxide, Amer, bgs, wks	lb.	.06¼	.07½	.06¼	.07½	.06¼ .07½
French 300 lb bbls, wks	lb.	.06½	.07¾	.06½	.07¾	.06½ .07¾
Palmitate, bbls	lb.	.23	.25	.23	.25	.23 .25
Resinate, fused, pale bbls	lb.	...	.10	...	.10	... .10
Stearate, 50 lb bbls	lb.	.21½	.24½	.21½	.24½	.20 .24½
Sulfate, crys, 400 lb. bbls wks	lb.	...	.029	...	.029	... .029
Flake, bbls	lb.	...	.0325	...	.0325	... .0325
Sulfide, 500 lb bbls, delv	lb.	.07¾	.08	.07¾	.08	.07¾ .08⅛
bgs, delv	lb.	.07½	.07¾	.07½	.07¾	.07½ .08⅝
Sulfocarbolate, 100 lb kgs	lb.	.24	.26	.24	.26	.24 .26
Zirconium Oxide, crude, 73-75% grd, bbls, wks	ton	75.00	100.00	75.00	100.00	75.00 100.00

Oils and Fats

Babassu, tks, futures	lb.	...	.06¼	.06¼	.06⅝	.05⅞	.07⅝
Castor, No. 3, 400 lb drs	lb.	...	.12¾	...	.12¾	.08¼	.12¾
Blown, 400 lb drs	lb.	...	.14¾	...	.14¾	.10¼	.14¾
China Wood, drs, spot NY	lb.	.27	.28	.27	.28	.15	.28
Tks, spot NY	lb.	.26	.27	.26	.27	.14½	.27
Coconut, edible, drs NY	lb.	.08⅝	.09⅜	.08⅝	.09⅛	.08⅛	.10⅛
Manila, tks, NY	lb.	...	.03¼	...	.03¼	.02⅞	.04⅝
Tks, Pacific Coast	lb.	...	.03½	...	.03½	.02⅝	.04⅜
Cod, Newfoundland, 50 gal bbls	gal.	...	.72	...	.72	.29	.72
Copra, bgs, NY	lb.		.0180	...	.0180	.0160	.2625
Corn, crude, tks, mills	lb.	.06¼	.06¼	.06¼	.06¼	.05⅛	.07⅛
Refd, 375 lb bbls, NY	lb.	.08½	.08¾	.08½	.08¾	.07½	.09¾
Degras, American, 50 gal bbls NY	lb.	.09	.10	.09	.10	.07	.10
English, bbls, NY	lb.	.09	.10	.09	.10	.07	.10
Greases, Yellow	lb.	.05⅛	.05¼	.05⅛	.05¼	.03⅞	.06¾
White, choice, bbls, NY	lb.	.05½	.05⅝	.05½	.05⅝	.04½	.07½
Lard, Oil, edible, prime	lb.	...	.10	...	.10	.09	.11¼
Extra, bbls	lb.	...	.09¾	...	.09¾	.08	.10¾
Extra, No. 1, bbls	lb.	...	.08⅞	...	.08⅞	.07¾	.10⅛
Linseed, Raw less than 5 bbl lots	lb.	...	.111	...	.111	.092	.119
bbls, c-l, spot	lb.	.103	.105	.103	.105	.084	.111
Tks	lb.	.097	.099	.097	.099	.078	.104
Menhaden, tks, Baltimore	gal.	...	.35	...	.35	.21	.35
Refined, alkali, drs	lb.	.071	.071	.071	.071	.062	.082
Tks	lb.	...	.069	...	.069	.056	.076
Kettle bodied, drs	lb.	...	.093	...	.093	.074	.094
Light pressed, drs	lb.	...	.075	...	.075	.056	.076
Tks	lb.	...	.069	...	.069	.067	.069
Neatsfoot, CT, 20°, bbls, NY	lb.	...	.19¼	...	.19¼	.14¾	.19¾
Extra, bbls, NY	lb.	...	.09	...	.09	.08	.10⅛
Pure, bbls, NY	lb.	...	.14¼	...	.14¼	.10¾	.16¾
Oiticica, bbls	lb.	.20	.21	.20	.21	.09¼	.21
Oleo, No. 1, bbls, NY	lb.	...	.07¾	...	.07¾	.07¼	.12
No. 2, bbls, NY	lb.		.07½	...	.07½	.06¾	.11¾
Olive, denat, bbls, NY	gal.	.95	.98	.95	.98	.82	1.40
Edible, bbls, NY	gal.		2.00		2.00	1.75	2.25
Foots, bbls, NY	lb.	.08¾	.08½	.08¾	.08½	.06¾	.10
Palm, Kernel, bulk	lb.	no prices		no prices		.034	.036
Niger, cks	lb.	...	.05½	...	.05½	.03⅝	.05½
Sumatra, tks	lb.	no prices		no prices		.0265	.02¾
Peanut, crude, bbls, NY	lb.	...	.06¾	...	.06¾	.06	.08
Tks, f.o.b. mill	lb	...	.06½	...	.06½	.05¼	.07¼
Refined, bbls, NY	lb.	.09½	.09¾	.09½	.09¾	.08¾	.10¾
Perilla, drs, NY	lb.	...	.19	...	.19	.09½	.16½
Tks, Coast	lb.	...	.18½	...	.18½	.089	.15¾
Pine, see Pine Oil, Chem. Sec.							
Rapeseed, blown, bbls, NY	lb.	.17	.17½	.17	.17½	.14	.17½
Denatured, drs, NY	gal.	1.00	1.05	1.00	1.05	.80	1.05
Red, Distilled, bbls	lb.	.08½	.09½	.08½	.09½	.06¾	.09½
Tks	lb.	...	.08	...	.08	.064	.08½
Sardine, Pac Coast, tks	gal.	...	.37	...	.37	.24	.38
Refined alkali, drs	lb.	...	.081	...	.081	.062	.082
Tks	lb.	...	.075	...	.075	.056	.076
Light pressed, drs	lb	...	.075	...	.075	.056	.076
Tks	lb.	...	.069	...	.069	.05	.07
Sesame, yellow, dom	lb.	.11¼	.11¾	.11¼	.11¾	.09	.12
White, dom	lb.	.11½	.11¾	.11½	.11¾	.09	.12
Soy Bean, crude							
Dom, tks, f.o.b. mills	lb.	...	.06	...	.06	.04½	.06½
Crude, drs, NY	lb.	.06⅝	.07½	.06⅝	.07½	.05⅛	.07⅝
Ref'd, drs, NY	lb.	.08	.08½	.08	.08½	.06¾	.09
Tks	lb.	...	.07¼	...	.07¼	.05¾	.07¾
Sperm, 38° CT, bleached bbls, NY	lb.	...	.103	...	.103	.09	.103
45° CT, blchd, bbls, NY	lb.	...	.096	...	.096	.083	.096
Stearic Acid, double pressed dist bgs	lb.	.12	.13	.12	.13	.10	.13½
Double pressed saponified bgs	lb.	.12¾	.13¼	.12¾	.13¾	.10¼	.13¾
Triple pressed dist bgs	lb.	.15½	.16½	.15½	.16½	.12¾	.16½
Stearine, Oleo, bbls	lb.	.06¼	.06½	.06¼	.06½	.05½	.12
Tallow City, extra loose	lb.	...	.05⅜	...	.05⅜	.04⅜	.07
Edible, tierces	lb.	...	.05¾	...	.05¾	.04½	.07¾
Acidless, tks, NY	lb.	...	.08	...	.08	.07	.09¼
Turkey Red, single, drs	lb	...	.09	...	.09	.06	.08⅝
Double, bbls	lb	.11¾	.12¾	.11¾	.12¾	.08¾	.11¼
Whale:							
Winter bleach, bbls, NY	lb.	...	.095	...	.095	.075	.095
Refined, nat, bbls, NY	lb.	...	.091	...	.091	.071	.091



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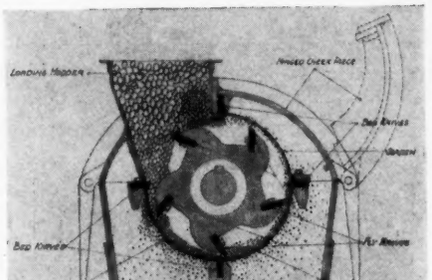

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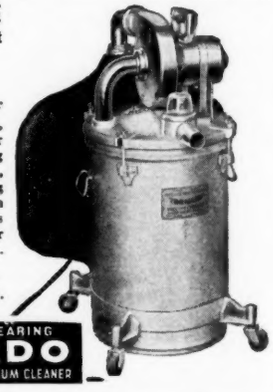

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New Products

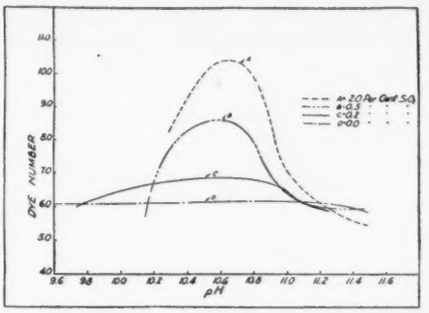
Emulsifier

A new emulsifier has been developed and is being marketed under the name of "Kesscowax AC." This emulsifier, which is a wax-like product, has been especially developed for the preparation of greaseless creams having an acid reaction. Deodorant, bleaching lemon, etc., creams or lotions can be easily prepared with the new emulsifier which gives very stable emulsions in the presence of citric, lactic, salicylic and other acids or acid substances.

Silicates in Detergent Processes

Problems in the familiar procedure of washing have, in many cases, been solved by experience and good judgment. However, progress is being made toward collecting adequate data so that these problems may be better understood.

On the scientific side of washing an interesting contribution appeared in *Kolloid Zeitschrift* under the authorship of McBain and Woo. The senior author has made many contributions to the understanding of soap systems as colloids but now he brings forward evidence that between colloid systems there are stable equilibria which may be reached from either direction. Starting with a colloid dispersion of an otherwise insoluble dyestuff in water and then placing over the water a layer of toluol, it was found that with gentle agitation a definite quantity of dye was transferred to the toluol layer, and conversely, beginning with dye dispersed in the toluol, the transition across the interface took place forming a colloidal solution in the water and the same equilibrium was eventually achieved. The connection between this and washing is that when soap is put into the water layer the equilibrium is shifted and the water layer becomes more capable of removing material from the oily layer. This property is expressed as a dye number. It has been learned that the presence of silicate in soap increases the dye number considerably and produces a greater effect than is possible with soap alone.



The graph, which was constructed from McBain's data, shows the effect of silica, at three concentrations, upon the dye number in relation to the alkalinity of the solutions expressed on the pH scale. These curves are an interesting supplement to the previously available evidence that silica has a function in washing operations quite distinct from that of alkali. The supporting action of silicates in detergent processes is not a simple function of alkalinity but silica supplements the effects of alkali in such a way that effects in the dispersion of solid matter with silicates extend far beyond what would be possible by the use of alkali and/or phosphates not associated with silica. Much smaller amounts of alkali may be used in the form of silicates than when the alkali is combined with other radicals or used in the form of caustic. Silica has also a specific effect in preventing the redeposition of dirt once suspended. All of these characteristics lead to the conclusion that silicates are important in the art of cleansing and that a knowledge of their use makes for better work and improved economy. *Silicate P's & Q's*, Second Month, 1940. Published by Philadelphia Quartz Co., 125 S. Third St., Philadelphia, Pa.

Neville Cyrene Resins

This newly developed line of modified polystyrene resins are hydrocarbon, thermoplastic polymers. They are non-saponifiable, resistant to water, acids, and alkalis, and soluble in aromatic hydrocarbons but with high solvent retention. Cyrene resins are hard, tough, and somewhat elastic, but do not have very good adhesion properties. These resins contrast with coumarone resins which are hard, brittle and non-elastic. Also in contrast to Neville coumarone resins, Neville cyrene resins are not compatible with drying oils. They show a higher degree of cohesion than coumarone resins, and exhibit exceptional freedom from tackiness. Three separate grades have been made available, having melting points 90-110° C., 125-140° C., and 145-160° C., respectively. Uses suggested are for adhesives and plastic molding compounds.

New Synthetic Resin

A new synthetic resin has been developed for use in sizing, finishing and printing cotton, rayon, spun rayon and other synthetic fibers It is claimed that the new product, "Cetesol," increases weaving efficiency, makes backfilling flexible and prevents dusting, and intensifies color value in prints.

New High Boiling Solvents

A group of naphthalene free, refined high boiling coal-tar solvents has recently been announced. These new products have been named "Cosols." They have high boiling ranges, high solvent powers and high specific gravity (.873-.946). "Cosols" are practically water-white, have low distillation residue, and mild, pleasant odor. Suggested uses are for wire enamels, inks, synthetic enamels, slow evaporating coatings, and wherever powerful, mild odored solvents are required.

Vinyon in Felts

A new line of felts are now being produced with the use of "Vinyon." The samples in the line represent a cotton construction in which from 15-20% of Vinyon has been used to replace wool, heretofore considered necessary in felt making. The materials are produced under heat and pressure and can be after-treated with sizing, latex and other finishing compounds.

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Index to Advertisers

Abernethy Co., John F. 187
American British Chemical Supplies, Inc. 230
American Cyanamid & Chemical Corp. .... Pages 134 and 135
American Potash & Chemical Corp. 234

Badger & Co., E. B. 187
Baker Chemical Co., J. T. 207
Barrett Co., The 233
Beacon Co. 246
Bemis Bro. Bag Co. 139
Bower Chemical Mfg. Co., Henry 237
Breuer Electric & Mfg. Co. 242
Brookmire Corporation 187
Burke, Edward S. 238

Chew, John A. 205
Church & Dwight Co., Inc. 223
Claflin, Alan A. 244
Columbia Alkali Corp. 210
Consolidated Chemical Mfg. Co. 244
Consolidated Products Co., Inc. 245
Croll-Reynolds Co. 243

Darco Corporation 188
Diamond Alkali Co. 176
Doe & Ingalls, Inc. 244
Dow Chemical Co. 143
Drug, Chemical and Allied Trades Section 240
Dunkel & Co., Inc., Paul A. 234
du Pont de Nemours & Co., Inc., E. I., Grasselli Chemical Department 140
du Pont de Nemours & Co., Inc., E. I., R. & H. Chemicals Department 137

Eastman Kodak Co. 228
Eastern Steel Barrel Corp. 242
Electro Bleaching Gas Co. 138

Foote Mineral Co. 237
Fergusson Co., Alex C. 244
Freeport Sulphur Co. 238
Fulton Bag & Cotton Mills 242

General Chemical Co. ..... Cover 3
Glickman, Charles S. 244
Grasselli Chemical Department, du Pont de Nemours & Co., Inc., E. I. 140
Gray & Co., William S. 232
Greeff & Co., R. W. 236

Harshaw Chemical Co., The 144
Heyden Chemical Corp. 141
Hooker Electrochemical Co. 232

Industrial Chemical Sales Division, West Virginia Pulp & Paper Co. 220

Jefferson Lake Oil Co., Inc. 246
Jungmann & Co. 238

Keystone Drum Co. 187
King & Co., Inc., E. & F. 244
Koppers Co. 228

Index to Advertisers

La Pine & Company, Arthur S. 244
Lunces, E. L. 244

Mallinckrodt Chemical Works 208
Mann & Co., Inc., Geo. 244
Mathieson Alkali Works, Inc. 131
Mathieu & Co., A. H. 246
Merck & Company, Inc. 136
Monsanto Chemical Co. 201
Mutual Chemical Co. of America, Inc. 133

National Aniline & Chemical Co., Inc. 190
Natural Products Refining Co. 146
Neuberg, Inc., William 226
Niacet Chemicals Corp. 226
Niagara Alkali Company 138

Oldbury Electro-Chemical Co. 236

Pacific Coast Borax Co., ... 241
Patterson Foundry & Machine Co. .....Cover 1
Pennsylvania Coal Products Co., ... 239
Petrometer Corp. 239
Pfaltz & Bauer, Inc. 247
Pfizer & Co., Inc., Chas. 218
Philadelphia Quartz Co. 142
Polachek, Z. H. 244
Pressed Steel Tank Company 145
Prior Chemical Corporation 202

R. & H. Chemicals Department, du Pont de Nemours & Co., Inc., E. I. 137
Rosenthal Co., Inc., H. H. 235

Saranac Machine Co. 244
Schuylkill Chemical Co. 244
Schwab Machinery Co., The 244
Sharples Solvents Corp. 169
Singer, T. E. R. 244
Slomon, Ira I. 244
Solvay Sales Corporation .....Cover 2
Sprout, Waldron & Co. 242
Standard Alcohol Co. 239
Starkweather Co., J. W. 244
Stauffer Chemical Co. 170
Stroock & Wittenberg Corp. 223

Tennessee Corp. 241
Texas Gulf Sulphur Co. 213
Turner & Co., Joseph 230

U. S. Industrial Chemicals, Inc.
Insert facing pages 216 and 217
U. S. Potash Co. 247
U. S. Stoneware Co. The 225

Victor Chemical Works 175

Warner Chemical Co., Division Westvaco Chlorine Products Corp. 129
Wishnick-Tumpeer, Inc. .....Cover 4

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"We"—Editorially Speaking

Russell Kent

We do not know the psychology involved, but many readers invariably start through a publication from the back to the front. Those so inclined will not have had the opportunity of reading our new "Washington Page" written by Russell Kent. Our Washington correspondent is a native of Iowa, received his education in public and private schools in Illinois, Texas and Tennessee. He has been engaged in newspaper work for years and is a contributor to many important national magazines. Mr. Kent was on the staff of the old *New York Sun*; was managing editor at various times of the following: *Knoxville Journal*; *Memphis News Scimitar*; and the *New Orleans Times-Picayune*. Since 1923 he has been Washington correspondent of the *Birmingham News and Age-Herald*. In '29 Mr. Kent was president of the National Press Club, and at present, is a member of the editorial board of the *United States News* (the David Lawrence weekly magazine). We hope that you will like Mr. Kent's column. You may not always agree with him and when you do not let's hear from you. There is always room on "The Reader Writes Page" for instructive comment.

❖❖❖❖

Speaking of new features in CHEMICAL INDUSTRIES, did you notice last month the digest of the English, French and Belgian patents specially prepared for this publication by E. L. Luaces, New York chemical consultant? In a quiet way our digest of United States patents has been one of the most popular services supplied by this paper. The digest of foreign patents follows immediately after the United States patents in the Statistical and Technical Data Section.

❖❖❖❖

It is always a pleasure to announce new additions to the staff for it means that we are increasing our ability to serve the loyal readers of CHEMICAL INDUSTRIES. Charles J. Cunneen graduated from New York University in '28. After a period of apprenticeship on several daily newspapers in New Jersey, he joined Western Electric at the Kearny Works. There he assisted in the preparation of house organs and publicity material. In 1931 he joined the staff of the Topics Publishing Company, publishers of *Drug Trade News, Drug Topics* and *Food Field Reporter*. In '36 Mr. Cunneen joined Hearst Magazines, Inc., as managing editor of *Drug World*. In his new position on CHEMICAL INDUSTRIES he will be in charge of news and markets.

J. M. Crowe is a graduate of the chemical engineering department of Clarkson College of Technology, Potsdam, N. Y., class of '39. At Clarkson he was active in extracurricular activities, particularly in publication work. Upon graduation he joined the chemical staff of Allied Products, Inc., Suffern, N. Y. Mr. Crowe will handle the patent digest, new equipment, review of new products and processes, as well as the technical data of the Buyer's Guidebook Number. Please feel free to call on both Mr. Cunneen and Mr. Crowe or any other members of the staff. We are here to serve you.

❖❖❖❖

We overheard a banker friend of ours recently supply the following explanation of the difference between organic and inorganic chemistry. Said he: "Organic chemistry is dynamic chemistry, while inorganic chemistry is static chemistry." We believe we said something an item or two back about our "Reader Writes" page being available for comment.

Fifteen Years Ago

From our files of February, 1925

Dr. Leo H. Baekeland subscribes $10,000 to the A. C. S. Endowment Fund.

Virginia-Carolina Chemical Co. sells its German potash mines to German interests for 2 million dollars.

General Amos A. Fries is reappointed Chief of Chemical Warfare Service, by action of the Senate.

E. C. Klipstein Sons Co. plans removal of its New Jersey factories to the main works at Charleston, W. Va.

Charles Hardy is president of Associated Metals & Minerals Corp., organized to handle non-ferrous metals and minerals.

Arthur D. Little, Inc., and Barnsdall Corp. form the Petroleum Chemical Corp. to produce isopropyl and other alcohols from petroleum, by a process developed in the Little laboratories.

Speaking of definitions, here is another recently overheard: "An executive is a research chemist who does not have to write a weekly report."

❖❖❖❖

We nominate for the "Quotation of the Month" the following from the pen of Charles Hardy, president, Charles Hardy, Inc., New York:

"Scientific progress requires vision, a faculty to combine knowledge acquired in many fields, and make it serve. The best conception of ideas is lost, if the courage and perseverance to carry on in spite of difficulties and adverse criticism is wanting.

The Sentence 'IT CAN NOT BE DONE' should be non-existing for the Research Man. It may be difficult, it may be uneconomical when the problem is finally solved, but problems so classified a few years ago, are to-day no longer difficult nor uneconomical.

'IT CAN BE DONE' must be before every Research Man and he will find a way. Convinced of 'IT CAN BE DONE' his heart and soul is in his work."

❖❖❖❖

While attending a few weeks ago the Westinghouse "Preview of Research for 1940," held at the East Pittsburgh laboratories we were fortunate indeed in making arrangements for several articles written by outstanding engineers of that company. The first will deal with the maintenance and care of electrical control and recording apparatus.

Space does not permit us to give a detailed summary of all the outstanding features that we have planned, but we do want to mention that Dr. Charles E. Mullin, well-known textile chemist, is preparing a series of three articles on the waterproofing, flameproofing and shrinkproofing of textiles; Dr. L. W. Bass, assistant director of Mellon, promises early delivery of his manuscript on "The Relationship of Fundamental and Industrial Research"; Joseph Wrench, manager of the Industrial Chemical Sales Division of West Virginia Pulp & Paper, will author "Activated Carbon." Dr. C. A. Tyler is writing two enlightening articles, the first "What Chemical Specialties Do the Chain Stores Sell," and the second, "How to Sell Chemical Specialties to the Chains."

❖❖❖❖

Did you know that:—

Some 4,750,000 man days of work were saved by the conciliation service of the Dept. of Labor.

Fiberglass, which has been in existence only since 1931, already has won 3,600 manufacturing and raw material specifications from 565 product groups in 49 different industries.

State of Chemical Trade

Current Statistics (January 31, 1940)—p. 51

WEEKLY STATISTICS OF BUSINESS

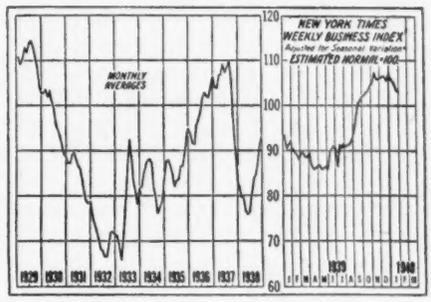
Week Ending	Carloadings 1939	Carloadings 1938	Carloadings % of Change	Electrical Output* 1939	Electrical Output* 1938	Electrical Output* % of Change	Jour. of Com. Price Index	Nat'l Chem. & Drugs	Fertilizer Fats & Oils	Ass'n Fert. Mat.	†Labor Dept. Price Indices Mixed Fert.	†Labor Dept. Price Indices All Groups	†Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher Commodity Index
Dec. 23	654,817	574,198	+14.0	2,641,458	2,362,947	+11.8	81.6	94.1	55.0	73.6	78.2	78.0	78.0	90.0	105.7	116.4
Dec. 30	550,270	499,455	+10.2	2,404,316	2,120,555	+13.4	82.1	**92.4**	53.7	73.8	78.2	78.1	78.1	73.7	106.8	115.9
	1940	1939		1940	1939											
Jan. 6	592,392	529,371	+11.9	2,473,397	2,189,532	+14.0	82.4	94.3	54.1	78.3	78.2	78.5	78.0	86.1	105.9	115.9
Jan. 13	667,713	582,244	+14.7	2,592,767	2,269,846	+14.2	81.8	94.3	53.2	73.6	78.2	78.3	77.8	84.8	105.0	116.1
Jan. 20	645,822	586,656	+10.1	2,572,117	2,290,000	+12.3	82.1	94.3	54.1	73.7	78.3	78.2	77.7	82.2	103.7	117.1
Jan. 27	649,488	590,459	+ 9.9	2,565,958	2,292,594	+11.9	81.7	94.3	53.5	73.6	78.3	78.2	77.6	77.3	103.2	117.1

* K.W.H. 000 omitted; † 1926-1928 = 100.00. Bold face figure indicates 1939 peak.

MONTHLY STATISTICS

CHEMICAL:	Dec. 1939	Dec. 1938	Nov. 1939	Nov. 1938	Oct. 1939	Oct. 1938
Acid, sulfuric (expressed as 50° Baumé, short tons, Bureau of the Census)						
Total prod. by fert. mfrs.	.....	.....	208,461	171,106	205,024	161,285
Consumpt. in mfr. fert.	.....	.....	176,860	147,592	175,338	151,083
Stocks end of month	.....	.....	74,027	87,331	75,337	90,340
Alcohol, Industrial (Bureau Internal Revenue)						
Ethyl alcohol prod., proof gal.	22,080,109	16,780,614	21,786,753	15,163,858	20,965,125	17,016,875
Comp. denat. prod., wine gal.	655,916	2,105,460	2,838,893	2,826,942	4,906,872	3,723,506
Removed, wine gal.	675,899	2,109,668	2,900,234	2,989,276	5,175,243	3,984,655
Stocks end of mo., wine gal.	304,976	426,639	350,954	433,186	412,987	507,198
Spec. denat. prod., wine gal.	10,502,486	8,372,981	10,221,280	7,359,401	10,274,257	7,375,919
Removed, wine gal.	10,758,595	8,323,920	10,168,118	7,319,214	10,277,452	7,202,642
Stocks end of mo., wine gal.	868,494	851,887	1,128,342	799,478	1,083,197	767,079
Ammonia sulfate prod., tons *a*	60,454.5	45,837	59,745	44,985	59,256	42,045
Benzol prod., gal. *b*	11,536,000	7,802,000	11,230,000	7,619,000	10,891,000	7,100,000
Byproduct coke, prod., tons *a*	4,718,197	3,362,845	4,566,573	3,277,523	4,526,602	3,092,806
Cellulose Plastic Products (Bureau of the Census)						
Nitrocellulose sheets, prod., lbs.	750,269	543,797	982,732	773,450	967,740	767,599
Sheets, ship., lbs.	830,164	674,069	861,442	675,716	884,318	804,556
Rods, prod., lbs.	283,258	187,926	286,736	174,270	262,792	252,909
Rods, ship., lbs.	298,140	201,074	295,438	266,944	262,835	66,470
Tubes, prod., lbs.	55,358	57,695	91,391	70,001	84,155	79,496
Tubes, ship., lbs.	70,356	61,942	86,820	65,573	84,827	66,470
Cellulose acetate, sheets, rod, tubes						
Production, lbs.	987,017	1,111,639	725,119	1,331,717	713,241	944,557
Shipments, lbs.	1,029,572	1,031,652	793,028	1,250,528	683,637	1,048,487
Molding comp., ship.: lbs.	1,135,205	671,160	1,119,050	955,591	1,332,699	989,219
Methanol (Bureau of the Census)						
Production, crude, gals.	434,021	357,249	479,622	344,328	463,420	335,380
Production, synthetic, gals.	4,184,479	2,844,249	4,611,707	2,617,979	4,158,161	2,294,552
Pyroxylin-Coated Textiles (Bureau of the Census)						
Light goods, ship., linear yds.	.....	.....	3,351,950	2,524,908	3,722,046	2,540,373
Heavy goods, ship., linear yds.	.....	.....	2,204,021	1,643,259	2,760,091	1,975,738
Pyroxylin spreads, lbs. *c*	.....	.....	5,413,300	4,288,697	6,371,331	4,921,674
Exports (Bureau of Foreign & Dom. Commerce)						
Chemicals and related prod. *d*	$23,102	$13,525	$19,321	$12,613	$19,774	$13,254
Crude sulfur *d*	$1,139	$666	$777	$600	$1,547	$1,326
Coal-tar chemicals *d*	$1,802	$1,032	$1,813	$817	$1,798	$890
Industrial chemicals *d*	$5,047	$2,065	$4,464	$2,093	$5,160	$2,511
Imports						
Chemicals and related prod. *d*	.....	.....	$14,000	$13,716	$13,445	$8,048
Coal-tar chemicals *d*	$1,307	$1,188	$1,567	$1,917	$1,604	$1,393
Industrial chemicals *d*	$1,556	$1,293	$1,465	$1,295	$1,421	$1,750
Employment (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	122.2	114.3	122.2	114.6	122.0	114.9
Other than petroleum	122.2	113.3	121.8	113.2	121.8	113.5
Chemicals	137.2	119.0	137.6	119.3	133.6	116.8
Explosives	108.1	86.3	106.6	86.4	104.2	87.8
Payrolls (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	133.0	119.3	133.0	118.3	133.1	119.3
Other than petroleum	131.6	114.7	131.5	113.5	131.0	115.1
Chemicals	161.4	132.2	161.5	130.4	157.9	130.4
Explosives	128.8	99.7	128.9	96.1	125.2	101.1
Price index chemicals	81.1	80.0	.....	80.2	82.1	80.5
Chem. and drugs	78.1	76.7	.....	76.6	78.1	77.1
Fert. mat.	74.5	68.6	.....	67.7	70.6	67.5
Paint and paint mat.	85.5	...	.....	.....	85.7	81.1
FERTILIZER:						
Exports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials	.....	133,295	.....	147,587	112,699	134,929
Ammonium sulfate	.....	2,482	.....	4,494	8,809	5,613
Total phosphate rock	.....	91,350	.....	107,760	58,402	67,078
Total potash fertilizers	.....	3,945	.....	3,080	7,648	18,061
Imports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials	.....	146,937	.....	114,164	112,411	156,034
Ammonium sulfate	.....	12,547	.....	9,677	13,422	5,005
Sodium nitrate	.....	32,336	.....	4,851	42,204	32,971
Total potash fertilizer	.....	66,897	.....	58,730	14,571	64,124

INDUSTRIAL TRENDS



Business: After its rapid advances in the latter half of 1939, industrial activity has begun to decline somewhat. However, the decline is less than seasonal and has the appearances of tapering off. Distribution of commodities to consumers was maintained in large volume.

Steel: Steel mill operations have been curtailed somewhat. The nation's producers reported schedules averaging 77.3% of capacity. The current level contrasts with a high of 94.4% set in the week of Nov. 27, 1939 and compares with an average operating rate of 52.8% at this time last year. Leaders of the industry are not alarmed by the drop in operations. New order volume is said to be enough to support 50% operation. The backlogs as 1939 ended were large enough to permit a slow reduction of operation and hope exists that demands of consumers will pick up again before the backlogs are entirely exhausted.

Commodity Prices: Commodity prices declined slightly in the week ended January 27. Prices of Wheat, which had advanced sharply early in December and continued at the higher level during the rest of the month, declined considerably in the first half of January. Smaller decreases occurred in some other Commodities, including hides, tin and zinc.

Wholesale Commodity prices averaged 82.0 in January; the highest since the early part of 1938, and 2.8 points above the corresponding month of 1939.

Carloadings: Receding from the sharp recoveries made since the first of the new year revenue freight carloadings in the week ended January 20 de-

State of Chemical Trade
Current Statistics (January 31, 1940)—p. 51

State of Chemical Trade

Current Statistics (January 31, 1940)—p. 52

creased 21,891 cars from the total of the preceding week to 645,822 cars. This total compares with 370,823 cars loaded in the like 1938 period, and with 586,566 cars in the like week of last year.

Wholesale Trade: Sales of wholesalers, based upon reports from 2,608 firms representing all parts of the country, increased 4.4% in December, 1939, over the same month of 1938. Dollar sales amounting to $177,194,000 were reported for December. These sales were 4.8% under November, 1939. During 1939 as a whole, sales of 2,276 wholesalers, amounting to $1,956,218,000 were 6.7% above the year 1938. The annual data show Metals, Electrical Goods, Industrial Supplies, and Furniture and House Furnishings ahead of 1938 by more than 20%.

Electric Output: The production of electric energy for public use during the month of December, 1939, totaled 11,849,491,000 Kwh. This represents an increase of 11.2% when compared with the same month in the previous year. The production of electric energy by electric railways and railroads, and other plants which generate principally for their own use totaled 217,126,000 Kwh., making a total production of 12,066,617,000 Kwh.

Retail Trade: There were large seasonal gains in prices and payrolls among retail stores from the middle of November to middle of December. Compared with December 1938, retail stores in New York State were employing 2.2% larger forces during December 1939 and were paying out 2.9% more in total payrolls. During the week ended January 26, 1939, retail volume for the Country as a whole showed an increase of approximately 3—6% over the corresponding week of last year.

Outlook: The general opinion holds that industrial activity will decline somewhat further before another rise can be expected. However, the decline is less than seasonal and in some cases has the appearance of tapering off. Many industries have sufficient backlogs to enable them to maintain a fair rate of activity until expected new orders come in. Inventories are not so heavy that they are likely to curb new buying of materials. Steel operations are likely to continue to drop from 77.3% possibly to 60%.

While it is true that there is some uncertainty, because of the domestic political situation and the European war, there is a strong undercurrent of optimism and 1940 is expected to become a very good year.

MONTHLY STATISTICS (cont'd)

	Dec. 1939	Dec. 1938	Nov. 1939	Nov. 1938	Oct. 1939	Oct. 1938
FERTILIZER: (Cont'd)						
Superphosphate e (Nat. Fert. Association)						
Production, total	359,432	291,832	359,292	287,123	350,396	259,305
Shipments, total	220,404	163,992	166,230	133,803	287,103	213,161
Northern area	111,688	65,432	91,219	66,239	160,357	122,569
Southern area	108,716	98,560	75,011	67,564	126,746	90,592
Stocks, end of month, total	1,689,997	1,768,103	1,508,231	1,595,469	1,266,029	1,388,395
Tag Sales (short tons, Nat. Fert. Association)						
Total, 17 states	189,564	219,046	110,205	146,872	210,116	131,199
Total, 12 southern	187,942	217,180	108,139	146,145	190,065	121,480
Total, 5 midwest	1,622	1,866	2,066	727	20,050	9,719
Fertilizer employment *i*	101.8	92.3	91.2	88.0	98.5	89.2
Fertilizer payrolls *i*	81.8	70.3	76.0	65.4	79.8	70.4
Value imports, fert. and mat. *d*	.....	.....	$2,159	$2,805	$2,536	$3,994
GENERAL:						
Acceptances outst'd'g *f*	$232	$269	$222	$273	$221	$269
Coal prod., anthracite, tons	3,862,000	4,533,006	3,946,000	3,803,000	4,557,000	3,518,678
Coal prod., bituminous, tons	37,283,000	36,541,000	42,835,000	35,925,000	41,574,000	34,900,000
Com. paper outst'd'g *f*	$209	$186	$214	$206	$205	$213
Failures, Dun & Bradstreet	882	875	886	984	916	997
Factory payrolls *i*	103.9	87.1	101.8	84.4	101.3	84.2
Factory employment *i*	104.0	94.0	103.8	93.3	103.3	92.4
Merchandise imports *d*	232,738	165,359	235,402,000	176,187,000	$215,281	$178,024
Merchandise exports *d*	357,450	266,358	292,734,000	252,381,000	$332,079	$277,668
GENERAL MANUFACTURING:						
Automotive production	452,024	388,346	351,782	372,413	313,377	209,512
Boot and shoe prod., pairs	28,411,553	29,987,849	31,872,015	30,053,832	37,072,568	35,012,310
Bldg. contracts, Dodge *j*	354,098	389,098	$299,847	$301,679	$261,796	$357,698
Newsprint prod., U. S. tons	77,836	75,855	78,886	75,855	78,591	72,827
Newsprint prod., Canada, tons.	240,656	209,753	288,726	245,226	280,985	254,872
Glass Containers, gross‡	.....	.....	4,300	3,709	4,891	3,866
Plate glass prod., sq. ft.	12,691,262	18,477,277	15,812,000	12,883,448	18,368,917	12,868,717
Window glass prod., boxes	1,188,940	1,003,150	1,142,570	882,595	1,121,288	641,394
Steel ingot prod., tons	5,164,420	3,130,746	5,462,616	3,558,363	5,393,821	3,105,000
% steel capacity	85.57	52.79	93.26	61.81	89.14	52.45
Pig iron prod., tons	3,768,336	2,210,728	3,720,436	2,269,983	3,627,590	2,067,000
U.S. cons'pt. crude rub., lg. tons	.....	45,315	54,322	49,050	55,764	40,333
Tire shipments	.....	4,170,808	.....	4,442,296	5,188,000	4,126,000
Tire production	.....	4,678,878	.....	4,117,457	5,431,000	4,183,000
Tire inventories	.....	8,497,932	.....	7,924,114	8,657,000	8,237,000
Cotton consumpt., bales	652,695	565,307	718,721	596,416	686,936	543,857
Cotton spindles oper.	24,943,302	22,432,648	22,774,170	22,447,106	22,658,994	22,113,952
Silk deliveries, bales	21,128	35,204	32,241	41,599	41,858	35,631
Wool Consumption *s*	32.6	29	39.0	34.1	39.4	28.3
Rayon deliv., lbs.	32,000,000	26,200,000	32,900,000	21,700,000	34,100,000	27,000,000
Hosiery (all kinds) *t*	.....	10,640,630	.....	9,035,186	9,910,650	8,831,369
Rayon employment *i*	312.2	298.4	314.0	299.9	310.8	301.4
Rayon payrolls *i*	314.0	276.8	310.7	277.1	303.4	277.0
Soap employment *i*	84.9	78.9	87.5	79.2	90.4	83.0
Soap payrolls *i*	102.3	93.3	103.9	91.9	109.0	98.6
Paper and pulp employment *i*	115.6	106.3	115.3	105.9	113.6	104.8
Paper and pulp payrolls *i*	122.7	103.5	124.7	103.0	125.6	106.6
Leather employment	86.9	86.6	87.9	85.3	88.4	82.5
Leather payrolls *i*	86.5	85.1	87.2	82.3	88.2	79.4
Glass employment *i*	109.0	99.0	110.2	98.0	106.2	93.1
Glass payrolls *i*	118.3	104.3	120.6	103.5	121.2	97.5
Rubber prod. employment *i*	92.9	83.5	94.0	82.3	92.4	77.6
Rubber prod. payrolls *i*	99.1	86.8	100.0	83.0	101.9	77.7
Dyeing and fin. employment *i*	133.0	123.0	134.3	120.0	132.9	116.1
Dyeing and fin. payrolls *i*	116.5	106.5	115.0	101.6	115.5	100.8
MISCELLANEOUS:						
Oils & Fats Index ('26 = 100)	.....	57.5	58.4	57.8	62.5	58.6
Gasoline prod., *p*	.....	48,026	60,656	48,201	54,974	48,294
Cottonseed oil consumpt., bbls.	.....	209,706	.....	263,024	483,261	281,028
PAINT, VARNISH, LACQUER, FILLERS:						
Sales 680 establishments	$26,810,005	$21,281,326	$30,472,039	$26,253,314	$35,827,911	$30,007,078
Trade sales (580 establishments)	$12,687,134	$9,885,307	$14,980,510	$13,183,545	$18,466,640	$16,128,067
Industrial sales, total	$11,589,021	$9,293,043	$12,482,932	$10,638,281	$14,007,459	$10,985,822
Paint & Varnish, employ. *i*	124.4	117.1	125.4	117.1	125.1	117.6
Paint & Varnish, payrolls *i*	130.0	117.6	132.0	116.0	134.7	118.6

a Bureau of Mines; *b* Crude and refined plus motor benzol, Bureau of Mines; *c* Based on 1 lb. of gun cotton to 7 lbs. of solvent, making an 8-lb. jelly; *d* 000 omitted, Bureau of Foreign & Domestic Commerce; *e* Expressed in equivalent tons of 16% A.P.A.; *f* 000,000 omitted at end of month; *i* U. S. Dept. of Labor, 3 year average, 1923-25 = 100, adjusted to 1937 census totals; *j* 000 omitted, 37 states; *p* Thousands of barrels, 42 gallons each; *q* 680 establishments, Bureau of the Census; *r* Classified sales, 580 establishments, Bureau of the Census; *s* 53 manufacturers, Bureau of the Census; *t* 384 identical manufacturers, Bureau of the Census, quantity expressed in dozen pairs; *v* In thousands of bbls., Bureau of the Census; ** Indices, Survey of Current Business, U. S. Dept. of Commerce; *z* Units are millions of lbs.; ‡ 000 omitted.

American Cyanamid Net About $2.00

Earnings of the American Cyanamid Co. in the final quarter of 1939 were the best of any three months period during the year, running in the neighborhood of 75 cents a share. Earnings for the first 9 months were equal to $1.24 a share so that net for the year is estimated at about $2.00 a share.

Current business is understood to be holding up well although forward orders are not coming in at the former rate.

Corn Products Refining Co.

The record-breaking rate at which Corn Products Refining Co. was receiving orders last September and October permitted a heavy rate of operations all through the final quarter of 1939. As a result of this, earnings in the last three months should equal the 96 cents a common share reported for the third quarter. Earnings of Corn Products in 1939, therefore, should run around $10,000,000, an increase of roughly $250,000 over 1938. In seven years of the past decade Corn Products has earned its full $3.00 annual dividend with something to spare.

Currently the volume of business is sharply reduced from the fall peak but is slightly ahead of a year ago.

Hercules Net Nearly Doubled

The Hercules Powder Co. reported net earnings of more than $5,000,000 for 1939, almost twice the 1938 figure. The common stock dividend amounted to $3.65 a share as compared with $1.95 paid in 1938.

Employment was up 23% and further gains are anticipated during the coming year. Capital expenditures during the year were approximately $4,981,000, more than double those of 1938. Important items in these expenditures are: increased capacity for manufacture of nitrocellulose, cellulose acetate, ethyl cellulose, and chlorinated rubber; construction of plant facilities for manufacture of anhydrous ammonia, completion of facilities to supply Hercules' needs for caustic soda and chlorine and improvements to the chemical cotton and naval stores plant. The company spent approximately $925,000 on various research and experimental work during the last year and expects to introduce some of the new products soon.

40c Dividend for Interchemical Corp.

Interchemical Corp. declared a dividend of 40 cents on common, payable February 1 to stock of record January 25. The previous payment was also 40 cents on November 1, 1939.

Price Trend of Representative Chemical Company Stocks

	Dec. 30	Jan. 6	Jan. 13	Jan. 20	Jan. 27	Jan. 31	Net gain or loss last mo.	Price on Jan. 31 1939	1940 High	1940 Low
Air Reduction	56⅛	56⅛	52	51½	52	50⅛	—6	57⅝	68	45¼
Allied Chemical	176½	177	172½	172¾	172¾	172¾	—3¾	173½	200½	151½
Amer. Agric. Chem.	20¼	20½	20⅛	19¾	20	20	—½	20½	24½	16
Amer. Cyanamid "B"	33⅝	33⅞	32⅞	34⅜	34⅛	34½	+⅞	24⅛	35¾	18⅜
Columbian Carbon	92½	92	91	88½	89⅞	88⅛	—4⅜	83⅞*	96	73
Comm'l Solvents	14	14¾	13⅝	13⅞	13⅞	13¾	—¼	11⅝	16	8⅝
Dow Chemical	143½	146½	145½	149¼	152¼	150½	+7	118	153½	101½
Du Pont	182	182⅜	177½	180	180⅞	180	—2	146¾	188½	126¼
Hercules Powder	89	90	88	90	89	89	...	77	101½	63
Mathieson Alkali	30⅛	31	28⅞	28½	29¾	29¼	—⅞	31½	37⅜	20¾
Monsanto Chem.	109¼	108½	104½	105	105½	107	—2¼	101¾	114¾	85¾
Standard of N. J.	43¾	46	43⅜	44⅛	44	43	—¾	50¼	53½	38
Texas Gulf Sulphur	32½	34⅞	33⅛	33¾	34⅛	34⅛	+1⅝	30¾	38½	26
Union Carbide	86¾	87⅛	82	80¼	80⅝	80⅜	—6⅜	85⅞	94¼	65½
U. S. Ind. Alcohol	23	25½	22½	23	22½	22	—1	21½	29⅜	13½

* Jan. 28.

Earnings Statements Summarized

Company:	Annual dividends	Net income 1939	Net income 1938	Common share earnings 1939	Common share earnings 1938	Surplus after dividends 1939	Surplus after dividends 1938
Atlas Powder Co.:							
n Year, Dec. 31	y$3.00	$1,299,137	$1,013,056	$3.82	$2.69	.....	.....
Catalin Corp.:							
Year, Dec. 31	y .15	165,315	38,522	.31	.07	.....	.....
Celotex Corp.:							
Year, Oct. 31	f	714,756	518,358	.93	.58	.....	.....
Dow Chemical Co.:							
**Nov. 30 quarter	y 3.00	1,995,586	589,669	h1.86	h.54	.....	.....
Six months, Nov. 30	y 3.00	3,445,110	1,428,372	h3.19	h1.35	.....	.....
Du Pont							
Year, December 31	y 7.00	93,218,664	50,190,827	7.70	3.79	$7,299,710	$5,479,052
Gypsum, Lime & Alabastine, Canada, Ltd.:							
Year, Nov. 30	f	165,068	74,316	...	...	.....	.....
Illinois Zinc Co.:							
Dec. 31 quarter	f	45,991	.....	.48	...	.....	.....
Lindsay Light and Chemical:							
n Year, Dec. 31	y .20	68,928	26,168	.89	.17	.....	.....
Mathieson Alkali Works, Inc.:							
Year, Dec. 31	1.50	1,095,962	999,473	1.12	1.01	d312,797	d409,295
New Jersey Zinc Co.:							
Dec. 31 quarter	y 2.50	1,791,116	1,035,210	.91	.53	.....	.....
Year, Dec. 31	y 2.50	5,299,055	3,220,314	2.70	1.64	390,895	d706,214
Paraffine Cos., Inc.:							
Dec. 31 quarter	y 2.25	473,655	364,260	.95	.71	.....	.....
Six months, Dec. 31	y 2.25	955,627	700,663	1.91	1.37	.....	.....
Pittsburgh Metallurgical Co., Inc.:							
Six months, Dec. 31	y 1.00	128,257	55,454	1.30	.56	.....	.....
Procter & Gamble Co.:							
Dec. 31 quarter	§ 2.00	7,634,697	5,784,750	1.17	.87	.....	.....
‡‡Six months Dec. 31	§ 2.00	14,586,538	11,882,260	2.23	1.79	.....	.....
Rustless Iron & Steel Corp.:							
n Year, December 31	y .25	1,090,876	81,110	1.13	p2.22	.....	.....

a On first preferred stock; *b* On second preferred stock; *d* Deficit; *f* No common dividend; *h* For the year 1939; *p* On preferred stock; *y* Amount paid or payable in 12 months to and including the payable date of the most recent dividend announcement; ‡ Indicated quarterly earnings as shown by comparison of company's reports for the 6 and 9 months periods; § plus extras; n Preliminary statement; *h* on shares outstanding at close of respective periods; ** Indicatd quarterly earnings as shown by comparison of company's reports for 1st quarter of fiscal year and the six months period; ‡‡ Indicated earnings as compiled from quarterly reports.

Dividends and Dates

Name	Div.	Stock Record	Payable
Compressed Industrial Gases	25c	Feb. 29	Mar. 15
Freeport Sulphur, q.	25c	Feb. 16	Mar. 1
Lindsay Light & Chem. Co.	15c	Feb. 3	Feb. 15
Lynch Corp.	50c	Feb. 5	Feb. 15
National Gypsum Co., pf., q.	$1.12½	Feb. 17	Mar. 1
Sherwin-Williams Co.	75c	Jan. 31	Feb. 15
pf.,q.	$1.25	Feb. 15	Mar. 1
Standard Oil Co. of Ohio, q.	25c	Feb. 29	Mar. 15
pf., q.	$1.25	Mar. 30	Apr. 15
Sun Oil Co. stock div.	5%	Feb. 24	Mar. 15
q.	25c	Feb. 24	Mar. 15
pf., q.	$1.50	Feb. 10	Mar. 1
Swan-Finch Oil Corp.	20c	Feb. 1	Feb. 15
pf., q.	37½c	Feb. 15	Mar. 1
American Smelting & Refining Co.	50c	Feb. 2	Feb. 20
American Zinc, Lead & Smelting $5 prior pf.	$1.25	Jan. 19	Feb. 1
Atlantic Refining Co. 4% pf. A. q.	$1.00	Jan. 5	Feb. 1
Atlas Powder Co., pf., q.	$1.25	Jan. 19	Feb. 1
Barnsdall Oil Co.	15c	Feb. 20	Mar. 9
Bon Ami, Cl. A., q.	$1.00	Jan. 15	Jan. 31
Bon Ami, Cl. B., q.	62½c	Jan. 15	Jan. 31
Colgate-Palmolive-Peet, q.	12½c	Jan. 24	Feb. 15
pf., q.	$1.50	Mar. 5	Apr. 1
Dominion Tar & Chemical, q.	$1.37½	Jan. 15	Feb. 1
Dow Chemical Co.	75c	Feb. 1	Feb. 15
pf., q.	$1.25	Feb. 1	Feb. 15
Hercules Powder Co., pf., q.	$1.50	Feb. 2	Feb. 15
Hilton-Davis Chemical Co.	20c	Jan. 25	Jan. 31
Horn (A. C.) Co., 7% non-cum. prior pf.	8¾c	Feb. 15	Mar. 1
Interchemical Corp.	40c	Jan. 25	Feb. 1
pf., q.	$1.50	Jan. 25	Feb. 1
International Nickel Co. of Can. pf., q., payable in U. S. currency	$1.75	Jan. 2	Feb. 1
Monsanto Chem. Co., pf., A & B (s.-A)	$2.25	May 10	June 1
Procter & Gamble Co., q.	50c	Jan. 25	Feb. 15
Extra	25c	Jan. 25	Feb. 15
Skelly Oil Co.	25c	Jan. 10	Jan. 30
pf., q.	$1.50	Jan. 5	Feb. 1
Smith Agricultural Chem. Co.	25c	Jan. 22	Feb. 1
6% pf., q.	$1.50	Jan. 22	Feb. 1
Standard Silica Corp.	10c	Feb. 5	Feb. 15
Westvaco Chlorine Products, pf., q.	37½c	Jan. 10	Feb. 1

Chemical Finances

January, 1940—p. 52

Chemical Stocks and Bonds

January 1940 Last	January 1940 High	1939 Low	1939 High	1938 Low	1938 High	Sales	Stocks	Par $	Shares Listed	Dividends	Earnings** $-per-share-$ 1939	1938	1937
						Number of shares							
NEW YORK STOCK EXCHANGE						January 1940	1939						
69½	70	68½	71½	53	61	46¼	4,300	55,900	Abbott Labs.	No	640,000	$2.05	....	2.43	2.51
50¼	58⅛	50½	68	45¼	67⅞	40	17,100	281,000	Air Reduction	No	2,563,992	1.50	....	1.47	2.86
172¾	179	171¾	200½	151½	197	124	8,900	158,000	Allied Chem & Dye	No	2,214,099	9.00	....	5.92	11.19
20	21	19¾	24½	16	28½	22	4,000	87,000	Amer. Agric. Chem	No	627,987	1.30	....	2.23	2.95
6⅝	8¼	6⅝	11⅞	5½	15	9	4,000	91,500	Amer. Com. Alcohol	No	260,930	....	....	—2.05	3.23
32⅛	32⅝	31¾	37	21	31½	20	1,400	30,000	Archer-Dan.-Midland	No	545,416	1.10	....	.43	5.03
65½	65¼	63	71	50	68	36	1,500	19,700	Atlas Powder Co.	No	250,288	3.00	$3.82	2.69	4.49
122	124¾	122	127	116	126¼	105	190	4,610	5% conv. cum. pfd.	100	68,597	5.00	....	14.77	20.90
26¾	30⅜	26⅝	30¼	13⅝	26⅝	9	36,900	936,000	Celanese Corp. Amer.	No	1,000,000	.50	....	.26	2.04
114	114⅜	108	109⅞	84	96	82	3,310	25,820	prior pfd	100	164,818	7.00	....	15.05	27.07
17⅞	18⅝	16⅝	18	11½	17	7⅛	55,200	604,900	Colgate-Palm.-Peet	No	1,962,087	1.00	....	1.77	—.35
103⅜	105¼	103⅞	107	101⅞	104¼	78	1,800	14,800	6% pfd.	100	233,098	6.00	....	21.12	3.21
88½	93¼	88½	96	73	98½	53¾	1,400	38,600	Columbian Carbon	No	537,406	4.50	....	5.13	8.31
13¾	15⅜	13⅛	16	8⅝	12¼	5⅞	99,500	1,303,700	Commercial Solvents	No	2,636,878	....	....	—.11	.60
63½	65⅛	62	67½	54⅞	70¾	53	11,300	214,100	Corn Products	25	2,530,000	3.00	....	3.18	2.52
175	177	175	177	150	177	162	500	9,900	7% cum. pfd.	100	245,738	7.00	....	39.69	32.96
21¾	23¼	20⅞	32⅜	18	40⅞	25	1,700	33,170	Devoe & Rayn. A.	No	95,000	....	2.05	—1.72	4.05
150½	152¼	142	144⅝	101½	141	67⅞	7,700	69,700	Dow Chemical	No	945,000	3.00	....	3.91	4.15
180	184¼	175	188½	128¼	154⅜	90½	25,100	571,700	DuPont de Nemours	20	11,065,762	7.00	7.70	3.74	7.37
123¼	123¼	122	124⅛	112	120½	109½	10,000	55,600	4½% pfd.	No	500,000	4.50	....	87.27	165.48
160½	166⅜	158½	186⅛	138⅛	187	121½	7,800	253,500	Eastman Kodak	No	2,250,921	6.00	....	7.54	9.76
173	178	173	183½	155½	173	157	120	4,350	6% cum.	100	61,657	6.00	....	281.22	362.45
33	34⅛	31⅝	36	18¼	32	19¾	11,500	255,800	Freeport Texas	10	796,380	1.50	....	1.87	3.30
9⅜	10	9⅛	10⅞	7	12⅛	6¾	3,900	69,300	Gen. Printing Ink	1	735,960	.80	....	.62	1.32
17¾	19¾	17⅛	24½	14	28½	13	16,900	175,500	Glidden Co.	No	829,989	.50	....	—.29	2.62
42	42	38⅛	47	34	51½	27	1,800	8,700	4½% cum. pfd.	50	199,940	2.25	....	1.03	12.72
113	113	111⅛	112¼	93	111	76¾	1,600	22,000	Hazel Atlas	25	434,409	5.00	....	4.97	6.67
89	91	87½	101½	63	87	42¾	8,800	140,300	Hercules Powder	No	1,316,710	2.85	3.65	1.95	2.97
132	133	131	135½	128½	135¼	126¾	480	6,730	6% cum. pfd.	100	96,194	6.00	....	35.31	50.73
26½	29	26	29½	16¾	30⅜	14⅜	5,700	212,100	Industrial Rayon	No	759,325	.75	....	.24	.34
42	43½	42¼	46¼	17½	34½	15	5,600	112,100	Interchem.	No	289,618	.40	....	.32	1.44
110	110	108	109¼	90	98	80	730	8,730	6% pfd.	100	65,661	6.00	....	7.39	12.26
1¾	2⅛	1⅝	3⅝	1½	3⅞	2	10,600	116,800	Intern. Agricul.	No	436,048	....	....	....	.16
34½	38	34½	41	16	29	15	1,600	33,700	7% cum. pfd.	100	100,000	....	....	7.01	7.70
35½	38⅞	35½	55¾	35	57⅝	36⅞	75,000	1,794,200	Intern. Nickel	No	14,584,025	2.00	....	2.09	3.31
34⅞	35¾	34⅞	38	29	30¼	10¼	500	19,600	Intern. Salt	No	240,000	1.75	....	2.29	2.11
22	22	21½	22½	14¼	24	10¼	1,500	14,600	Kellogg (Spencer)	No	509,213	1.10	....	.71	2.81
48¾	53⅜	48⅜	56¾	36½	58⅜	23¼	15,700	303,100	Libbey Owens Ford	No	2,509,750	2.75	....	1.57	4.19
16¾	17½	15½	19	13¼	21¼	12¼	15,000	107,000	Liquid Carbonic	No	700,000	1.00	....	1.81	2.37
29¼	31⅜	28⅛	37⅜	20⅜	36⅞	19⅜	6,900	179,000	Mathieson Alkali	No	828,171	1.50	1.12	1.01	1.81
107	109⅜	104¼	114⅜	85¾	110	67	8,400	141,600	Monsanto Chem.	No	1,241,816	3.00	....	2.35	4.40
118	118	117¼	121	110	117½	111	280	5,010	4½% pfd. A.	No	50,000	4.50	....	31.51	49.99
120	120⅜	120	122½	112	...	...	300	5,370	4½% pfd. B.	No	50,000	4.50	....	31.51	49.99
19⅝	21¼	19⅜	27½	17⅞	31	17⅛	23,600	431,800	National Lead	10	3,095,100	.87	....	.75	.95
173	173	170	173½	152	178½	154	400	7,300	7% cum. "A" pfd.	100	213,793	7.00	....	26.03	22.86
148	148	144	145	132	145½	127	630	6,710	6% cum. "B" pfd.	100	103,277	6.00	....	35.97	43.77
12	13⅜	11¼	17¾	8½	10¼	9⅞	12,600	458,700	Newport Industries	1	621,359	....	....	—.08	2.22
62⅜	64⅝	61	70	50	76¼	40	18,000	229,800	Owens-Illinois Glass	12.50	2,661,204	2.00	....	2.02	3.51
68¼	68¾	65¾	66	50⅝	59	39½	17,800	251,400	Procter & Gamble	No	6,325,087	2.25	....	2.59	4.08
113	118½	113	119¾	112	122¼	114	730	15,200	5% pfd.	100	189,517	5.00	....	101.81	157.05
11¼	13¼	11¼	17¼	9⅞	18⅜	10	9,700	246,200	Shell Union Oil	No	13,070,625	.50	.77	.70	1.44
105⅜	106¼	105⅜	107⅞	98½	106¼	93	1,300	25,600	5½ cum. pfd.	100	341,000	5.50	....	33.18	60.59
20	22¼	20	29½	15½	34¾	18½	3,600	123,500	Skelly Oil	No	995,349	.75	....	2.27	6.07
103½	103½	99¼	98¼	92	98	84	1,300	7,200	6% cum. pfd.	100	64,500	6.00	....	41.09	97.86
26½	27⅜	26¼	30	22⅝	35¼	24⅜	44,600	666,700	S. O. Indiana	25	15,272,020	1.25	....	1.82	3.16
43	46½	43	53½	38	58⅜	30⅜	77,100	1,273,500	S. O. New Jersey	25	26,618,065	1.25	....	2.86	5.64
5⅞	6⅞	5⅞	9¼	4	8	3⅞	3,600	176,200	Tenn. Corp.	5	853,696	....	....	.46	1.09
42⅝	46½	42⅝	50⅜	32½	49⅝	37⅝	47,700	1,045,800	Texas Corp.	25	10,876,882	2.00	....	2.13	5.02
34⅛	34⅞	34	38½	26	38	26	12,900	316,400	Texas Gulf Sulphur	No	3,840,000	2.00	....	1.81	3.02
80⅜	88⅜	80	94½	65½	90⅞	57	36,600	694,900	Union Carbide & Carbon	No	9,073,288	1.90	....	2.77	4.81
55½	60¼	55½	69½	52	73½	39	4,000	58,800	United Carbon	No	397,885	3.00	....	3.78	5.91
22	26¼	22	29⅜	13½	30¼	13¼	11,600	145,500	U. S. Indus. Alcohol	No	391,238	....	....	—1.08	1.24
30	34¾	28¾	40	16	28⅞	11¾	19,500	532,600	Vanadium Corp. Amer.	No	376,637	1.00	....	.61	2.22
30	31	29¾	29¾	18¼	25¼	13½	3,800	81,200	Victor Chem.	5	696,000	1.40	....	1.05	1.01
3⅜	4⅛	3⅜	5⅜	2½	5⅝	2¾	4,600	168,600	Virginia-Caro. Chem.	No	486,122	....	....	—1.80	—.05
28¼	31⅜	28	33⅜	17	32¼	15¾	5,700	98,200	6% cum. part. pfd.	100	213,052	....	....	1.99	5.88
35½	38¼	33¼	39¼	15¼	20¼	10	6,700	72,600	Westvaco Chlorine	No	339,262	1.85	....	1.52	1.46
36¼	39¼	35½	39½	29	31½	20	3,000	37,100	cum. pfd.	30	192,000	1.50	....	4.19	4.09
NEW YORK STOCK EXCHANGE															
34½	34½	33½	35¾	18⅜	30¼	15½	40,300	499,800	Amer. Cyanamid "B"	10	2,520,368	.60	....	.91	2.09
111	111	105	112¾	76	92	50	1,800	18,860	Celanese. 7% cum. 1st pfd.	100	148,179	7.19	....	8.95	22.32
5½	5½	3⅝	6¾	3	6¾	3	3,500	11,200	Celluloid Corp.	15	194,952	....	....	—2.73	—.92
7⅛	7¾	7⅛	7⅝	4½	12	6½	600	4,900	Courtauld's Ltd.	£1	24,000,000	.13	....	.26%	8.64%
7⅜	7⅜	6⅞	9¼	5	9⅞	6	3,200	21,900	Duval Texas Sulphur	No	500,000	....	....	.71	.43
71½	75⅜	67	68	30	41¼	27	2,850	18,000	Heyden Chem. Corp.	100	149,643	2.00	....	2.07	3.94
100¾	102¼	99¼	117	90	115½	55	6,500	68,300	Pittsburgh Plate Glass	25	2,142,443	4.00	....	3.00	8.53
93	96½	92¾	113½	81	117⅜	66	4,150	58,350	Sherwin Williams	25	638,927	2.75	....	2.43	8.76
111½	113½	111	116	106½	114⅛	107	230	3,170	5% cum. pfd.	50	132,189	5.00	....	8.76	45.50
PHILADELPHIA STOCK EXCHANGE															
173½	173½	167½	179	135	167	121½	425	5,725	Pennsylvania Salt	50	150,000	6.00	....	6.90	11.79

January 1940 Last	January 1940 High	1939 Low	1939 High	1938 Low	1938 High	Sales	Bonds	Date Due	Int. %	Int. Period	Outstanding $
NEW YORK STOCK EXCHANGE						January 1940	1939				
103¼	103½	102⅛	103¾	98	105⅜	99⅛	179,000	4,655,000	Amer. I. G. Chem. Conv.	1951	5	J-D	$22,400,000
37½	40	37½	41½	19	38	25⅛	175,000	1,261,000	Anglo Chilean Nitrate inc. deb.	1959	4	A-O	40,000,000
107¼	107¼	107	108⅜	101¾	106⅛	102⅜	50,000	340,000	Dow Chemical	1941	3	A-O	5,000,000
101⅞	102⅜	101	102½	90	94	93	111,000	1,704,000	Industrial Rayon	1948	4½	J-J	7,100,000
102⅞	102⅞	102⅞	103½	99⅞	102¾	100	1,000	212,000	Int. Agric. Corp. 1st Coll. tr. stpd. to 1942	1949	5½	M-N	3,900,000
34½	39¾	34½	37	21½	35⅜	24¾	244,000	2,018,000	Lautaro Nitrate inc. deb.	1975	4	J-D	27,200,000
16½	..	..	30	16	35⅜	24¾	....	15,000	Ruhr Chem.	1951	6	J-D	5,000,000
96	99⅝	95⅛	95¾	88¾	...	...	521,000	2,708,000	Shell Union Oil	1954	2½	J-J	85,000,000
103	105	103	105¾	98	104⅜	90¼	36,000	925,000	Skelly Oil	1975	4	J-D	30,500,000
105⅞	106⅛	104⅝	106¼	97⅜	105⅜	100	294,000	3,846,000	Standard Oil Co. (New Jersey) deb.	1948	3	A-D	85,000,000
105	105½	105	106½	94¼	103	98	144,000	4,372,000	Standard Oil Co. (New Jersey) deb.	1954	2¾	J-J	50,000,000
107	107¼	106¼	108⅝	102	103	95	153,000	4,385,000	Texas Corp.	1951	3½	J-J	9,000,000
105¾	105⅞	105⅜	105⅞	95¼	...	...	329,000	4,831,000	Texas Corp.	1981	3	J-D	85,000,000
102½	105	102	118½	96	101	77	90,000	1,209,000	Vanadium Corp. conv.	1953	5	J-J	50,000,000

* Paid in 1939, including extras but excluding dividends paid in stock. ** For either fiscal or calendar year.

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 165

A Complete Check-List of Products, Chemicals, Process Industries

Agricultural Chemicals

Preparation a stock stabilizer for dairy products, comprising the preparation of a sugar syrup containing decolorized and deodorized extracts from Irish moss. No. 2,183,597. Daniel V. Wadsworth and Leonard Wickenden, Manhasset, N. Y., to John J. Naugle, New York City.

Continuous process for calcium metaphosphate, comprising mixing rock phosphate and metaphosphoric acid, and fusing the mixture to form the desired salt and volatilizing for recovery the excess metaphosphoric acid. No. 2,184,287. Harry A. Curtis, Knoxville, Tenn.

Protective coatings for fruits comprising a suitable wax and N— N′ dichloroazodicarbonamidine. No. 2,186,691. Thomas R. Belzer, Los Angeles, Calif., to Socony-Vacuum Oil Co., N. Y. City.

Method conserving plant food and humus in soil comprises incorporating rosin in high organic soils. No. 2,187,532. Martin Leatherman, Hyattsville, Md., to free use of People of United States of America.

Method obtaining starch from corn by steeping the latter with gluten settler water containing SO_2. No. 2,186,303. Rush O. McCoy, Berwyn, Ill., to Corn Products Refining Co., New York City.

Cellulose

Production cellulose from wood and other lignin-containing materials of a cellulosic nature, by treating with nitric acid in amount sufficient to convert all the lignin into alkali-soluble oxidation products. No. 2,183,643. Henry Dreyfus, London, England.

Manufacture mixed esters of cellulose containing dicarboxylic acid radicals and lower fatty acid radicals. No. 2,183,982. Loring W. Blanchard, Jr., and Carlton L. Crane, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Manufacture hydroxy- or carboxy-alkyl cellulose ethers. No. 2,184,564. Horace Finningley Oxley, Edward Boaden Thomas, and John Downing, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Delaware.

Cellulosic composition for moistureproofing articles, comprising cellulose nitrate, a wax, and a plasticizer of the formula $R''\text{-}SO_2\text{-}N(R)(R')$, where R is an alkyl radical of 4-18 carbon atoms, R′ is hydrogen, alkyl, alkoxyalkyl, aryl, aralkyl, and salicyclic, and R″ benzene and its homologues, and the hydrogen, halo-, alkyl, alkoxy, aryl, and hydrocarbon substitution products thereof. No. 2,186,262. James A. Mitchell, Kenmore, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production a bleached cellulose pulp from bagasse. No. 2,186,487. Herman L. Joachim, San Francisco, Calif., to Maui Agricultural Co., Ltd., a corp. of the Territory of Hawaii.

Composition of matter, being a cellulose organic derivative and, as a plasticizer therefor, tetrahydrofurfuryl tetrahydrofuroate. No. 2,186,631. Joseph B. Dickey and James B. Normington, to Eastman Kodak Co., all of Rochester, N. Y.

Cellulose, absorbent paper product of the group consisting of towels, napkins, etc., comprising rosin-alum sized cellulose fibers incorporated therewith an oil emulsion of a phospholipoid alleviates hardening effects due to ageing of fibers. No. 2,186,709. Ben W. Rowland, to The Institute of Paper Chemistry, Appleton, Wisc.

Method fabricating an impregnated and coated cellulosic fiber material comprising impregnating with soluble copper salt, drying and passing through alkali insolubilizing bath, washing drying and passing through ammoniacal cupric oxide solution. No. 2,186,713. Clarence B. White, Montclair, N. J.

Production acetylatable cellulose from wood comprises sulfite digestion with resulting pulp at bleachability < 35%, chlorinating, removing chlorination products, hypochlorite bleaching, treating chlorinated bleached pulp with 7% NaOH at 30-120° C., washing, dehydrating and subjecting to acetic acid at 25-60° C. No. 2,187,710. L. Goff, L. Sheldon, M. Herzog and F. Olsen to Cellulose Research Corp., all of East Alton, Ill.

Chemical Specialty

Waterproofing composition, comprising an aqueous emulsion of a diglyco ester of a higher fatty acid and a soluble metal salt forming an insoluble soap with a higher fatty acid. No. 21,311. Reissue. John B. Cleaveland, Far Hills, N. J.

Dielectric liquid, comprising a tri- or tetra-isopropyl, alkyl, halobenzene. No. 2,183,552. Robert B. Dreisbach and George Beal Heusted, to The Dow Chemical Co., all of Midland, Mich.

Spray oil, consisting of a petroleum fraction (A. P. I. gravity, 23-27) having an overall Sligh oxidation number of about 20, and a de Ong number less than about 80. No. 2,183,781. Ulric B. Bray, Palos Verdes Estates, Calif., to Union Oil Co. of California, Los Angeles, Calif.

Extraction solvent for separating liquid hydrocarbon mixtures into various fractions, being a substituted aliphatic amide of an acid of 1-4 carbon atoms and a base of the type: ROH, where R is: hydrogen, alkyl, or methylol. No. 2,183,852. James H. Boyd, Jr., Kennett Square, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Textile assistants, being compounds of the type: R-X-Y, where R is a higher hydrocarbon radical of over 8 carbon atoms, X is a polyoxyalkylene group from a lower polyhydric alcohol, and Y a lower aliphatic carboxyl compound. No. 2,183,853. Hans Haussmann, Mannheim, and Walter Scheuffler, and Josef Kaupp, Ludwigshafen-on-the-Rhine, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Textile assistant, consisting of a composition containing an acetal ether derivative. No. 2,184,009. Joseph B. Dickey and James B. Normington, to Eastman Kodak Co., all of Rochester, N. Y.

Manufacture a denatured alcohol, containing about 0.5-5.0 parts of an ethyl amyl ether per 100 parts 95% alcohol. No. 2,184,010. Louis J. Figg, Jr., and James W. Rhea, Kingsport, Tenn., to Eastman Kodak Co., Rochester, N Y.

Non-staining textile oil of medium color, consisting of a textile lubricant containing 0.1-0.25% solid sulfur. No. 2,184,040. Walter Garner, Menston-in-Wharfdale, England.

Formaldehyde composition for photographic use, comprising paraformaldehyde, an alkaline salt, and a solid agent acting as neutralizing agent when said composition is dissolved in water. No. 2,184,053. Lowell E. Muehler, to Eastman Kodak Co., both of Rochester, N. Y.

Moth-proofing materials, comprising aqueous chromium fluoride (1:125), applied while warm to the fabric, which is then squeezed nearly dry and air-dried at at least 150° F. No. 2,184,147. Wilfrid Lowe, Hayfield, near Stockport, England.

Transparent, rubbery sheet, comprising polyvinyl acetal resin containing a high proportion of butyraldehyde acetal groups and an elasticizing amount of tetrahydrofurfuryl maleate. No. 2,184,155. Henry B. Smith, to Eastman Kodak Co., both of Rochester, N. Y.

Age-resisting rubber product, consisting of rubber having incorporated therewith the reaction product of anhydro-para-aminobenzyl alcohol and a secondary diaryl amine. No. 2,184,168. Winfield Scott, Akron, Ohio, to Wingfoot Corporation, Wilmington, Del.

Washing composition, comprising wetting agent (an alkali metal salt of naphthalene sulfonic acid) and a water-soluble cellulose ethyl ether beta-sulfonate. No. 2,184,171. Kurt Sponsel, Wiesbaden-Biebrich, and Karl Daimler, Frankfort-on-the-Main-Hochst, Germany, to Kaile & Co., Aktiengesellschaft, Wiesbaden-Biebrich, Germany.

Ski dressing liquid, comprising celluloid, acetone, shellac, and graphite in combination. No. 2,184,182. James E. Flint, North Newport, N. H.

Printing device, comprising ink-receptive portions of photochemically-hardened polyvinyl-alcohol and 0.1-20% of a monocarboxylic acid of at least 5 carbon atoms. No. 2,184,288. Charles Dangelmajer, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Printing device, comprising ink-receptive portions of photochemically-hardened polyvinyl-alcohol and 0.3-20% of an organic sulfonyl compound. No. 2,184,289. Charles Dangelmajer, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Abrasive sheet material, comprising a base, abrasive, and coating to bind same; said coating comprising substantially the resinous reaction product of urea, formaldehyde, and an aliphatic monobasic alcohol, said product containing said alcohol in combined form in amount of about ½-1 molecule alcohol per molecule of urea, said product yielding, upon treatment with acetic anhydride and zinc chloride the acetate of said alcohol. No. 2,184,293. Donald E. Edgar, Philadelphia, and Harry G. Stauffer, Drexel Hill, Pa., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Light-sensitive layer, comprising polyvinyl alcohol, maleic acid sufficient to give high ink receptivity, and a light-sensitizing agent. No. 2,184,310. Frederick M. Meigs and Charles Dangelmajer, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Printing device, whose ink-receptive areas are constituted of polyvinyl alcohol, and dispersed rubber in amount sufficient to give said areas high ink receptivity. No. 2,184,311. Frederick M. Meigs, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Mineral binder for glass fiber, consisting of a finely-divided mineral of the class: clay, bentonite, alumina, and diatomaceous earth, which has been incorporated with a solid, organic bituminous material capable of pyrolytic reaction, and which has then been heated only enough to cause resinification of the mixture. No. 2,184,316. Jesse H. Plummer, Newark, Ohio, to Owens-Corning Fiberglas Corp., a corp. of Del.

Transparent, rubbery sheeting, comprising a polyvinyl acetal resin and an elasticizing amount of tributyrin. No. 2,184,423. Bruce E. Gramkee, to Eastman Kodak Co., both of Rochester, N. Y.

Transparent, rubbery sheet, comprising polyvinyl acetal resin containing an elasticizing amount of a lower alkyl phthalyl ethyl glycollate. No. 2,184,426. Neil S. Kocher and Henry B. Smith, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Perfume material, predominantly the hemi-acetal of para-isopropyl-alpha-methyl-hydrocinnamic aldehyde with an aromatic or terpene alcohol. No. 2,184,526. Walter Christian Meuly, New Brunswick, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Finely-divided cuprous oxide, stabilized with a particle coating of protein. No. 2,184,617. Loren C. Hurd, Glenside, Pa., to Rohm & Haas Co., Philadelphia, Pa.

Mothproofing detergent, comprising an acid soapy washing agent containing triphenyl-dichlorobenzyl phosphonium chloride, being an almost colorless solid when dry and soluble in water, for treating wool, feathers, hair, etc. No. 2,184,951. Hermann Stotter, Leverkusen, I. G. Werk, and Theodor Hermann, Frankfort-on-the-Main Hochst, Germany, to Winthrop Chemical Co., Inc., New York City.

Rustproofing composition, comprising a hydrocarbon coating vehicle containing at least 5% aldehyde-free unsaturated distillation residue of acids produced in the low-temperature, liquid phase catalytic oxidation of hydrocarbon wax. No. 2,184,952. John C. Zimmer, Hillside, N. J., and Jack B. Crutchfield, Richmond, Va., to Standard Oil Development Co., a corp. of Delaware.

Gasoline blending agent, consisting of a branched ether of a polyhydric alcohol of the class: glycols and glycerols, added to the fuel in amount sufficient to improve the anti-knock properties of said gasoline. No. 2,184,956. Edwin R. Gilliland, Cambridge, Mass., and Raphael Rosen, Elizabeth, N. J., to Standard Oil Development Co., a corp. of Delaware.

Refrigeration mixture, comprising ammonia and methylamine, a solvent therefor comprising monoethanolamine, and a gaseous substance inert with respect to the first 2 and having a common chemical substituent therewith and with the solvent. No. 2,184,993. Curtis C. Coons, to The Hoover Co., both of North Canton, Ohio.

Protective coating for the interior of tinned containers, comprising 99% amorphous petroleum wax (M. P., 160-170° F.), 0.5% Halowax, and 0.5% of a condensation product of chlorinated paraffin wax with naphthalene. No. 2,185,031. Frederick H. MacLaren, Calumet City, Ill., and Elmer Wade Adams, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Opaque paraffin wax, comprising a paraffin wax containing a froth stabilizer of the group: alkali sulfonic acid soaps, sodium stearate, hydroxyethyl stearate, and alkyl xanthates. No. 2,185,046. Vanderveer Voorhees, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Non-aqueous, liquid coating, comprising a solution of zein in anhydrous mixture of solvents comprising organic compounds having both polar and non-polar radicals in definite ratio. No. 2,185,110. Roy E. Coleman, to The Zein Corp. of America, a corp. of Delaware.

Accelerator for Diesel fuels, being tetranitromethane, added in minor proportion to the fuel. No. 2,185,157. Edwin M. Nygaard and George S. Crandall, Woodbury, N. J., to Socony-Vacuum Oil Co., Inc., New York City.

Non-corrosive anti-freeze, comprising an alcohol containing an inhibiting amount (0.05-1.0%) of one of the group: ethyl nitrate, isoamyl nitrate, nitro-methane, and nitro-ethane. No. 2,185,238. Fred R. Whaley, Buffalo, N. Y., to Carbide & Carbon Chemicals Corp., a corp. of New York.

Refrigerant, comprising a volatile liquid in which water is difficultly

U. S. Chemical Patents
Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 165

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 166

soluble, and minor proportions of a metallic alcoholate and a solvent for same miscible with the refrigerant, to absorb water and acid. No. 2,185,332. David Crampton, Montclair, N. J.

Wood preservative, comprising an alkali-metal chromate, one of the compounds: ammonium and potassium bifluorides, and sufficient potassium carbonate to render a water solution of the mixture almost neutral (about pH 7). No. 2,185,533. Karl Wolman, Berlin-Grunewald, and Richard Huber, Berlin-Wilmersdorf, Germany.

As a heat-transfer medium, nuclear chlorinated ethylbenzene containing at least 3 atoms of chlorine. No. 2,185,639. Arthur A. Levine and Oliver W. Cass, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Foil material, comprising 2 metal foils having interposed a layer of pectin which is adherent to the surrounding metal foils; said composite foil being substantially non-porous and gas-tight. No. 2,185,649. Gustav Ruoff, Cologne, Germany to California Fruit Growers Exchange, Los Angeles, Calif.

Anti-freezing preparation to be sprayed on plants, comprising an aqueous petroleum oil emulsion having dispersed therein glycerine, alcohol, honey, and blood albumin. No. 2,185,663. Oliver P. Greenstreet, San Diego, and Thomas C. Hall, La Mesa, Calif.

Wrapping materials, comprising a carrier material carrying a complex compound of a metal with ammonia and an acid radical which evolves ammonia when subjected to the action of carbon dioxide. No. 2,185,954. Arthur Ryner, London, Eng., to Preservators, Limited, London, England.

Froth flotation mixture, comprising saturated and unsaturated alkylamines having 3-10 carbon atoms, and unsaturated and saturated alkanes. No. 2,185,968. Anderson W. Ralston, William O. Pool and James Harwood, to Armour & Co., all of Chicago, Ill.

Cleanser for stainless steel and rustless iron surfaces, containing phosphoric acid and an extractive detergent—orthodichlorobenzol or methyl isobutyl ketone. No. 2,186,017. Charles J. Geng, Nutley, N. J., to Wilson-Imperial Co., Newark, N. J.

Preservative for cellulosic materials against decay, stain and mold fungi, and insects, comprising a water-soluble mixture of a halogenated phenolic compound of the group: alkali metal salts of tetrachlorophenol and pentachlorophenol, and an alkali metal borate, the ratio of alkali metal phenol salt to the alkali metal borate being about 1/1.5. No. 2,186,134. Alfred Dale Chapman, Chicago, Ill., and Ralph Melvin Lindgren, St. Paul, Minn., to A. D. Chapman & Co., Inc., Chicago, Ill.

Gasket, comprising a body material of comminuted cork and a binder therefor, the latter being an olefin polysulfide. No. 2,186,284. Harry B. Denman, to Detroit Gasket & Mfg. Co., both of Detroit, Mich.

Liquid lubricant composition, comprising mineral lubricating oil and a small amount of a salt of a polyvalent or amphoteric metal and a higher fatty acid derivative. No. 2,186,346. Vernon L. Ricketts, Oakland, Calif., to Shell Development Co., San Francisco, Calif.

Manufacture lustrous, mirror-like articles, comprising "silvering" by reducing a copper, gold, platinum, or silver salt while said salt is suspended in a volatile solvent solution of a cellulose ester or ether. No. 2,186,452. Ernst Freund and Friedrich Deutsch, Vienna, Austria, to E. I. du Pont de Nemours & Co., Wilmington, Del.

Manufacture leather, comprising impregnating tanned leather with recovered lignin from woody fibers, solubilized by alkali, and insolubilizing the lignin in situ in the leather. No. 2,186,509. Fredrick J. Wallace, Erie, Pa., to Robeson Process Co., New York City.

Manufacture a progressive-burning, smokeless powder, comprising smokeless powder grains surface-coated with a water-soluble deterrent material. No. 2,186,516. Floyd L. Boddicker, Ishpheming, Mich., to Hercules Powder Co., Wilmington, Del.

Plaster mortar composition, comprising hydraulic binder, a blast-furnace slag product, and a finely-divided, solid, anhydrous water glass. No. 2,186,532. Alfred Ladwig, Dusseldorf-Benrath, Germany, to Philadelphia Quartz Co., Philadelphia, Pa.

Hydraulic method for making a clay dispersion of a difficultly slakable clay. No. 2,186,661. Paul Bechtner and Winfred B. Hirschmann, to American Colloid Co., all of Chicago, Ill.

Method decreasing resistance to flow of a polymeric organic sulfide comprises subjecting sulfide to the action member of group consisting of thio-phenols and thio-alcohols and to member of group consisting of thiuram disulfides, diaryl sulfides and arylene thiazyl disulfides. No. 2,186,714. Mortimer A. Youker, to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Process treatment of fibrous materials to render them resistant to mildew. No. 2,186,739. Frederick Thomas Metcalf, Blackley, Manchester, Eng.

Process for proofing porous materials against water and action of moulds consists in applying essentially an alkaline aqueous dispersion of neutral compounds of naphthenic acid and a stable waterproof aqueous dispersion of rubber. No. 2,186,750. William James Carter, Avonmouth, England, to National Processes, Ltd., London, Eng.

Printing on asphaltic compositions utilizing solvent astions to introduce binder into bituminous base where binder is precipitated. No. 2,186,756. John T. Hargrave, to Interchemical Corp., both of N. Y. City.

Manufacture producing concrete of relatively high strength and density which includes step of grinding clinker with carbon black in granular form in preparing cement ingredient of the concrete. No. 2,186,792. George C. Wilsnack, Easton, Pa., one-half to Edison Cement Corp., New Village, N. J., and one-half to Binney & Smith Co., N. Y. City.

Process concentrating aqueous solution by freezing out part of water of quiescent body and separating ice from remaining solution. No. 2,186,887. Friedrich Steinbacher, Grunwald, near Munich, Germany, one-half to Gesellschaft fur Lindes Eismaschinen A. G. Wiesbaden, and one-half to Georg Alexander Krause, Munich, Germany.

Process disintegrating fibrous vegetable materials by use of nitric acid. No. 2,186,893. Alfons Bayerl, Wolfren, Bitterfeld, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Process treating fibrous material with soln. of condensation product of an aminooxyazoline with an aliphatic amine of more than 8 carbon atoms. No. 2,186,894. Karl Brodersen and Matthias Quaedvlieg, Dessau in Anhalt, Germany, to General Aniline Works, Inc., New York City.

Reaction unit for urine acetone test. No. 2,186,902. William B. Fortune, to Eli Lilly & Co., both of Indianapolis, Ind.

Composition comprising wax oxidized with hydrogen peroxide said oxidized wax having elastic and rubber-like characteristics. No. 2,186,909. Ralph C. Pollock, Long Beach, Calif., to Union Oil Co. of California, Los Angeles, Calif.

Method for lubricating oil of low pour point comprising mixture of high pour point lubricating oil and paraffin wax oxidized with hydrogen peroxide. No. 2,186,910. Ralph C. Pollock, Long Beach, Calif., to Union Oil Co. of California, Los Angeles, Calif.

Manufacture a high capacity depolarizer by roasting natural pyrolusite in presence of carbon and subsequent treatment with mineral acid. No. 2,186,929. Carlo Rossetti, Yverdon, Switzerland, to Leclanche S. A., Yverdon, Switzerland.

Process photographic positives includes step of illuminating layer of fulgides through negative with colored light of predetermined wave length, said layer adapted to change color under influence of and in accordance with intensity of illumination. No. 2,186,942. O. Vierling, to Zeiss Aktiengesellschaft, both of Dresden, Germany.

Process preparing plates for lithographic printing comprises treating image-bearing metal plate with polyacrylic compound. No. 2,186,945. Wm. H. Wood, Bedford, Ohio, to Harris-Seybold-Potter Co., Cleveland, Ohio.

Method making high-heat composite mica products comprises building up layers of mica and metallic sheets and baking under high temperature and pressure. No. 2,186,954. W. A. Boughton, Cambridge, and W. R. Mansfield, Boston, Mass., to New Eng. Mica Co., Waltham, Mass.

Catalytic flameless lighter comprising blocks of catalytic material separated by channels for passage of vapors to upper portion. No. 2,186,995. G. Schmitt to Cardinal Products, Inc., both of N. Y. City.

Method treating fluorescent or phosphorescent material to increase luminescent properties comprises heat treatment and use of motion of gas molecules to prevent agglomeration. No. 2,187,022. W. Flechsig, Berlin-Charlottenburg, Germany, to Fernsen Aktiengesellschaft, Berlin-Zehlendorf, Germany.

Process uncrystallizable sugar, comprises subjecting dry sugar to increasing temperature to about 350° F. No. 2,187,122. C. G. Guth, Baltimore, Md.

Deodorant puff comprises treating fibrous puff with powder base and deodorant material. No. 2,187,163. W. Langer, N. Y. City.

Apparatus extraction of oil from material with solvent. No. 2,187,209. D. McDonald, to Engineering, Inc., both of Los Angeles, Calif.

Hydrocarbon burner containing mixing chamber designed to prevent downdrafts and eddy currents. No. 2,187,261. J. Breese to Oil Devices, both of Santa Fe, New Mexico.

Manufacture vanillin comprises fixing conditions of certain reactants to cause nitro compound to oxidize lignin to vanillin. No. 2,187,366. L. Schulz, to Schimmel & Co., both of Miltitz, Germany.

Refrigeration medium comprising halogen derivative of aliphatic hydrocarbon and lubricating liquid substantially immiscible therewith. No. 2,187,388. H. Williams to General Motors Corp., both of Dayton, O.

Aqueous solution of a cevitamate of a base of the class consisting of alkali metals, alkaline earth metals, ammonium and lower-alkyl-substituted amines. No. 2,187,467. E. Stuart, to Eli Lilly & Co., both of Indianapolis, Ind.

Detergent of constant pH comprising strongly alkaline substance and buffer. No. 2,187,536. Souren Z. Avedikian, N. Y. City.

Preparation surgical tape comprises impregnating cloth base with deacetylated chitin, drying and applying adhesive containing uncured rubber. No. 2,187,563. Raymond E. Thomas, Newburgh, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method concentrating citrus fruit juice includes separating chromatophore fraction by centrifuging, freezing portion of aqueous liquid recombining concentrated liquid with chromatophore fraction. No. 2,187,572. G. Meinzer, Glendale, Calif., to California Consumers Corporation, Los Angeles, Calif.

Anesthetic capable of being used in spray nozzle without deposition and clogging having formula $NH_2.C_6H_4CO.O(CH_2)_2.NH(HCl).R$. No. 2,187,597. James G. Blaso, E. Elmhurst, L. I., N. Y.

Method modulizing carbon black in apparatus which causes particles to contact and agglomerate. No. 2,187,601. Daniel Glaxner, Pampa, Tex., to Columbia Carbon Co., N. Y. City.

Conbustion, heat transfer and gas purification plant. No. 2,187,627. Walter Noack, to Aktiengesellschaft, Brown Boveri & Cie., both of Baden, Switzerland.

Apparatus separation of particles having different electrical susceptibilities by use of rotating electrode. No. 2,187,637. Henry M. Sutton and Edwin G. Steele, Dallas, Tex.

Storage battery comprises asphalt container, plates of graphite rubber mixture adapted to receive material to make plates bipolar and lead salt electrolyte. No. 2,187,638. Hohannes Zernike, Eindhoven, Netherlands, to N. V. Phillips Gloeilampenfabrieken, Eindhoven, Netherlands.

Method separating gas from liquid includes steps of creating tangential flow of mixture, increasing rotational speed by restricting cross sectional area of flowing liquid. No. 2,187,646. Georges Darrieus, Houilles, France, to Aktiengesellschaft, Brown, Boveri & Cie., Baden, Switzerland.

Hydrophilic composition of matter reactible with water to produce hard hydrophobic composition. No. 2,187,668. Lloyd L. Smith, Minneapolis, Minn.

Coal Tar Chemicals

Preparation aliphatic acid esters of leuco dibenzanthrone compounds and their stable derivatives. No. 2,183,628. Otto Stallmann, Bridgeton, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production aliphatic acid esters of alkylol ethers of the dibenzanthrone and isodibenzanthrone series. No. 2,183,629. Otto Stallmann, Bridgeton, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation aliphatic acid esters of Bz-2-hydroxydibenzanthrone and Bz-2-hydroxy-isodibenzanthrone. No. 2,183,630. Otto Stallmann, Bridgeton, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Manufacture amino- and alkylamino-derivatives of anthraquinone by direct combination of an anthraquinone with ammonia or alkylamine, in the presence of a nitrogen-complex-forming metal compound. No. 2,183,652. Geoffrey Lord and George Reeves, Spondon, near Derby, England, to Celanese Corp. of America, a corp. of Delaware.

Preparation a stable reduction product of Bz-2,Bz-2′-dihydroxydibenzanthrone, comprising precipitating in alkaline solution the monoalkali-metal salt with controlled temperature and pH range. No. 2,183,625. Otto Stallmann, Bridgeton, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation compounds of the cyclopentano-perhydrophenanthrene series. No. 2,183,851. Max Bockmuhl, Gustav Ehrhart, Heinrich Ruschig, and Walter Aumuller, Frankfort-on-the-Main-Hochst, Germany, to Winthrop Chemical Co., Inc., New York City.

Manufacture cyclohexyl amine, comprising catalytic hydrogenation of a stabilized aniline, the latter having been pretreated with lead or a basic compound thereof. No. 2,184,070. Johann A. Bertsch, St. Louis, Mo., to Monsanto Chem. Co., St. Louis, Mo.

Purification of waste tricresyl phosphate used in the extraction of phenols. No. 2,184,697. Hinrich Havemann and Karl Smeykal, Leuna, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 167

Separation of thiophenols from their admixture with alkylphenols, comprising a counter-current extraction with aqueous ammonia (conc. not less than about 10%) to form an aqueous layer containing the thiophenols and a layer of alkylphenols. No. 2,184,928. Daniel B. Luten, Jr., and Samuel Benson Thomas, Berkeley, Calif., to Shell Development Co., San Francisco, Calif.

Preparation of dialkyl-benzenoid sulfides. No. 2,185,007. Bruno H. Wojcik, Niagara Falls, N. Y., to Hooker Electrochemical Co., New York City.

Preparation dialkyl-benzenoid sulfides, in which 2 polyalkyl benzenoid groups are joined through at least 1 sulfur atom. No. 2,185,008. Bruno H. Wojcik, Niagara Falls, N. Y., to Hooker Electrochemical Co., New York City.

Preparation dihalobenzenoid alkyl polysulfides. No. 2,185,009. Jesse H. Babcock and Anthony Loverde, Niagara Falls, N. Y., to Hooker Electrochemical Co., New York City.

Preparation a thiocyano-alkyl ether of a cyclohexylphenol. No. 2,185,207. John E. Livak, to The Dow Chemical Co., both of Midland, Mich.

Preparation thiocyano-alkyl ethers of phenylphenol. No. 2,185,208. John E. Livak, Gerald H. Coleman, and Clarence L. Moyle, to The Dow Chemical Co., all of Midland, Mich.

Preparation of alpha-naphthyl nitriles, comprising condensing naphthalene and a halogenated nitrile of a lower fatty acid, in the presence of anhydrous ferric chloride, at 165-185° C. No. 2,185,237. John Weijlard and William H. Engels, Rahway, N. J., to Merck & Co., Inc., Rahway, N. J.

Preparation of individual, substituted 3-aminopyrenes, wherein the substituent may be: acetamino, acetyl, chlorine, or carboxyl. No. 2,185,661. Martin Corell and Heinrich Vollmann, Frankfort-on-the-Main, and Hans Becker, Hofheim in Taunus, Germany, to General Aniline Works, Inc., New York City.

Method oxidizing a leuco-amino-anthraquinone having an amino group in the 1-position and in the 4-position an amino or hydroxyl radical, by means of an aromatic nitroso compound. No. 2,185,709. James Ogilvie, Buffalo, and Richard S. Wilder, Hamburg, N. Y., to National Aniline & Chemical Co., Inc., New York City.

Manufacture benzylidene-anilines, comprising reacting formaldehyde with a para-N-alkyl-amino-nitroso-benzene compound and a N-alkyl-amino-benzene free of para substituents; the former 2 reactants being admitted to the reaction zone at a temperature less than that prevailing in said zone. No. 2,185,854. Frederick H. Kranz, Buffalo, N. Y., to National Aniline & Chemical Co., Inc., New York City.

Sulfonated condensation products of terpenes with alkylphenols, said products being prepared in the form of their alkali metal salts as white-to-brown powders stable and soluble in water, dilute acid and alkali, and having high wetting power in acid, neutral, and alkaline solution. No. 2,186,132. Robert Zink, Bridgeville, Pa., to American Cyanamid & Chem. Corp., New York City.

Coatings

Manufacture a grease-proof paper, whose film-forming ingredient (deacetylated chitin) is precipitated together with the size onto the pulp stock. No. 2,184,307. Louis Leonard Larson, to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Manufacture grease-proof paper, wherein size and the film-forming component—deacetylated chitin—are added to the pulp batch, and the precipitated coating swollen on the paper after the sheet is dry. No. 2,184,312. Warner J. Merill, to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Powdered metal paint, consisting of metal flakes coated with a leafing agent and a liquid vehicle forming a relatively hard permanent film, together with a non-metallic corrosion-inhibiting pigment. No. 2,184,324. Frank A. Strauss, New Brighton, Staten Island, to Wailes Dove-Hermiston Corp., New York City.

Process treating coal against weathering, comprising coating the lumps with a crystallizable solution of paraffin wax and a liquid hydrocarbon of burning time over 16 hours. No. 2,184,621. Richard C. Marmaduke, Kansas City, Mo., to Sherman Marmaduke, Kansas City, Mo.

Process coating flexible porous sheets, comprising treating the stretched sheet, as fed from a roll, so that an aqueous rubber dispersion and (separately) a dehydrating and setting calcium compound can be applied to the surface, forming an adherent, waterproof coating congealing to a non-tacky condition, so that the freshly-coated sheeting can be rolled up on a winding reel. No. 2,185,217. David Pelton Moore, Avon Park, Fla.

Manufacture a composite material of a pervious base sheet of fibrous material coated to render it greaseproof and waterproof on at least one side, comprising impregnating it with a continuous, preformed film of a vinyl resin material such that the resin does not strike through or substantially impregnate the base sheeting. No. 2,185,356. Harold F. Robertson, Coraopolis, Pa., to Union Carbide & Carbon Corp., of New York.

Method inhibiting rusting of a ferrous metal surface, comprising applying a coating of substantially non-sticky and non-gummy film of viscous hydrocarbon oil containing about 10% synthetic ester of the group consisting of alkyl stearates and naphthenates. No. 2,186,018. William K. Griesinger, Lansdowne, Pa., to The Atlantic Refining Co., Philadelphia, Pa.

Dyes, Stains, Etc.

Production a Prussian Blue photographic image from a silver image. No. 2,183,661. Lyne Starling Trimble, to Cinecolor, Inc., Los Angeles, Calif.

Manufacture copper salts of primary resorcinol trisazo dyestuffs. No. 2,183,673. Fritz Dobler and Hans Buess, Basel, Switzerland, to J. R. Geigy, S. A., Basel, Switzerland.

Method dyeing furs that have been chrome-tanned and given a pH value of 6-7, comprising immersing the fur in a neutral solution of a dye prepared by coupling 4,6-dinitro-2-aminophenol with a N-derivative of an amino-naphthol. No. 2,183,752. Mordecai Mendoza and George Stuart James White, Blackley, Manchester, England, to Imperial Chemical Industries, Ltd., a corp. of Great Britain.

Production an acetate-silk dyestuff, comprising reacting a naphthazarine intermediate with para-aminophenol-benzyl ethers, in the presence of a reducing agent, and oxidizing the leuco form produced. No. 2,183,870. Rudolf Robl, Ludwigshafen-on-the-Rhine, Germany, to General Aniline Works, Inc., New York City.

Preparation a vat dyestuff yielding golden yellow shades on vegetable fibres, being a di-(mono-para-keto-dibenzylamine) derivative of 1,6-diaminoanthraquinone. No. 2,183,873. Otto Schlichting and Karl Koeberle, Ludwigshafen-am-Rhine, Germany, to General Aniline Works, Inc., N. Y. City.

Method dyeing an organic derivative of cellulose with a nuclear, non-sulfonated arylazo derivative of a 5-alkyl-cyclohexadione-1,3. No. 2,183,997. James G. McNally and Joseph B. Dickey, to Eastman Kodak Co., all of Rochester, N. Y.

Production azo dyestuffs containing a tetrahydrofuryl nucleus. No. 2,183,999. James G. McNally and Joseph B. Dickey, to Eastman Kodak Co., all of Rochester, N. Y.

Fruit-coloring dye dispersion, consisting of a soap dispersion in water of a xylene-azobeta-naphthol dye containing less than 30% of the meta isomer. No. 2,184,237. Kenneth H. Klipstein, New Vernon, N. J., to American Cyanamid Co., New York City.

Printing colors for printing on animal and vegetable fibers, said colors consisting of dyestuff, thickening agent, and an acid amide of the general formula: R_1-S-R_2-CO-N(R_3)(R_4), where R_1 is: lower alkyl, hydroxyalkyl, or alkoxyalkyl, R_2 is methylene, and R_3 and R_4 are hydrogen or alkyl. No. 2,184,495. Charles Graenacher, Riehen, and Max Matter, Basel, Switzerland, to Society of Chem. Industry in Basle, Basel, Switzerland.

Preparation acid wool dyestuffs containing a cyclohexylmethyl substituent, said dyes yielding red shades of good fastness on animal fibers. No. 2,184,948. Carl Theo Schutis, Bergen, near Frankfort-am-Main, and Ernst Korten, Frankfort-am-Main-Fechenheim, Germany, to General Aniline Works, Inc., N. Y. City.

Preparation a 4-para-halobenzoylamino-anthraquinone-6′-chlorobenzacridone. No. 2,185,140. Wilhelm Bauer, Leverkusen-Wiesdorf, Germany, to General Aniline Works, Inc., New York City.

Production a black printing vat dyestuff, by fusing with caustic alkali a dibenzanthrone compound having a group capable of promoting condensation of dye molecules, said dye being fast to cellulose acetate in acetone. No. 2,185,143. Moses L. Crossley and Lawrence D. Lytle, Plainfield, N. J., to American Cyanamid Co., N. Y. City.

Preparation diazo derivatives of guanidyl sulfonic acids. No. 2,185,152. Hans Z. Lecher, Plainfield, and Henry Philip Orem, North Plainfield, N. J., to American Cyanamid Co., New York City.

Production an ice color intermediate, being a stabilized diazo compound having for a principal group a saturated aliphatic or cycloaliphatic guanidyl sulfonic acid radical. No. 2,185,153. Hans Z. Lecher, Plainfield and Henry Philip Orem, North Plainfield, N. J., to American Cyanamid Co., New York City.

Manufacture microcrystalline dye pastes and powders of the alkylation derivatives of dihydroxydibenzanthrene. No. 2,185,871. Otto Stallmann, Bridgeton, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Preparation of metal compounds of the azo-dyestuffs of the general formula corresponding to derivatives of the pyrazolone ring. No. 2,185,901. Max Schmid, Riehen, Switzerland, to Society of Chemical Industry in Basle, Basel, Switzerland.

Method treating vegetable fibers with caustic alkaline medium, for the production of dyeings of complex metal compounds of direct cotton dyestuffs thereon. No. 2,185,905. Fritz Straub, Basel, Walter Hanhart, Riehen near Basel, and Walter Anderau, Basel, Switzerland, to Society of Chemical Industry in Basle, Switzerland.

Production water-soluble azo dyestuff, comprising essentially an azotized alpha-amino-beta-hydroxy-naphthyl beta-naphthamino ketone, yielding on vegetable fiber bright red shades of good fastness to washing and boiling, and very good fastness to light. No. 2,186,226. Werner Zerweck and Ernst Heinrich, Frankfort-on-the-Main-Fechenheim, Germany, to General Aniline Works, Inc., New York City.

Production a vat dyestuff having a nucleus consisting of a di-(anthraquinonyl-arylene) azo base. No. 2,186,389. Heinrich Neresheimer, Ludwigshafen-on-the-Rhine, Ernst Honold, Frankfort-on-the-Main, Berthold Stein, Ludwigshafen-on-the-Rhine, Max Schubert, Frankfort-on-the-Main, and Ernst Anton, Ludwigshafen-on-the-Rhine, Germany, to General Aniline Works, Inc., New York City.

Production dyeings by means of water-soluble acyl derivatives of sparingly soluble dyestuffs. No. 2,187,453. C. Graenacher, Riehen, Switzerland, to Society of Chem. Ind., Basel, Switzerland.

Explosives

Ammonium nitrate explosive, containing normally solid nitrated aryl hydrocarbon and normally solid, oxygen-free, organic fuel soluble (when molten) in the nitro-hydrocarbon. No. 2,185,248. Clyde Oliver Davis, Woodbury, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Fine Chemicals

Catalytic process making aliphatic acids from aqueous mixtures of alcohol and aldehyde, in the presence of a copper-zinc-manganese alloy catalyst. No. 2,184,555. William O. Kenyon, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Concentration of aqueous acetic acid, comprising distilling with heptane or dioxane, whereby azeotropic distillation of the water and agent is made possible. No. 2,184,563. Donald F. Othmer, Brooklyn, N. Y., to Eastman Kodak Co., Jersey City, N. J.

Production of active-chlorine chloro-dicyandiamide and chloro-melamine. No. 2,184,883. Irving E. Muskat, and Albert G. Chenicek, Barberton, Ohio, to Pittsburgh Plate Glass Co., Allegheny County, Pa.

Preparation chlorinated ammeline and ammelide, in which the chlorine is present to a large extent in active form. No. 2,184,886. Irving E. Muskat, Akron, Ohio, and Albert G. Chenicek, Barberton, Ohio, to Pittsburgh Plate Glass Co., Allegheny County, Pa.

Production a halogenated compound of the group consisting of halogenated amides and imides of cyanuric acid, and polymers of cyanamide, said compound having a substantial amount of the halogen in active form. No. 2,184,888. Irving E. Musakt, Akron, and Albert G. Chenicek, Barberton, Ohio, to Pittsburgh Plate Glass Co., Allegheny County, Pa.

Preparation of 2-methyl-5-chloromethyl-6-amino-pyrimidine hydrochloride. No. 2,184,964. Gustav A. Stein, Elizabeth, N. J., to Research Corp., New York City.

Production beta-phenylethyl alcohol from beta-halo-ethylbenzene. No. 2,185,141. Joseph W. Britton, Gerald H. Coleman, and Bartholdt C. Hadler, Midland, Mich., to The Dow Chemical Co., Midland, Mich.

Preparation thiocyano-alkyl ethers of alkylphenols of the general type: R-O-C_nH_{2n}-SCN, where n is an integer from 2 to 5, and R an alkyl radi-

U. S. Chemical Patents
Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 167

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 168

cal of at least 8 carbon atoms. No. 2,185,183. Gerald H. Coleman and Clarence L. Moyle, to The Dow Chemical Co., all of Midland, Mich.

Preparation a thiocyano-alkyl ether of an alkyl-halo-phenol. No. 2,185,184. Gerald H. Coleman and Clarence L. Moyle, to The Dow Chemical Co., all of Midland, Mich.

Preparation a thiocyano-alkyl ether of a halo-phenol. No. 2,185,185. Gerald H. Coleman, to The Dow Chemical Co., both of Midland, Mich.

Production of N-substituted lutidones, comprising reacting a primary arylamine with diacetyl acetone, in the presence of a volatile water-insoluble organic solvent inert to the reactants. No. 2,185,243. Albert B. Boese, Jr., Pittsburgh, Pa., to Carbide & Carbon Chemicals Corp., a corp. of New York.

Preparation esters of propionic and butyric acids with an aliphatic polyhydric nitro-alcohol of the group: trimethylol nitromethane and dimethylol nitroethane. No. 2,185,297. Walter E. Gloor, Parlin, N. J., to Hercules Powder Co., Wilmington, Del.

Preparation aromatic arsonic and stibonic acids. No. 2,185,972. Max Bockmuhl and Gustav Ehrhart, Frankfort-on-the-Main-Hochst, Germany, to Winthrop Chemical Co., Inc., New York City.

Method treating metals electronegative to iron, and belonging to the second sub-group. Group II, Periodic System, comprising essentially dipping said metals in a chromic acid bath containing sulfate, thereby producing a high-lustred effect on the surface of said metals. No. 2,186,579. George Dubpernell, Waterbury, Conn., and Karl Gustaf Soderberg, Detroit, Mich., to The Udylite Corp.

Recovery of glutamic acid from its solutions, comprising precipitating same by adding ammonium formate. No. 2,186,162. Geza Braun, to Standard Brands, Incorporated, both of New York City.

Crystalline boric oxide, melting at 460-470° C., and a density of about 242. No. 2,186,257. Leon McCulloch, Pittsburgh, Pa., to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Production pentaerythritol by condensing formaldehyde and acetaldehyde. No. 2,186,272. Joseph A. Wyler, Allentown, Pa., to Trojan Powder Co., Allentown, Pa.

Production acylacetic-arylides, being yellowish crystalline substances sol. in caustic soda and in high-boiling organic solvents, having a strong affinity for natural and regenerated cellulose fibers. No. 2,186,274. Robert Schmitt, Darmstadt, and Hans Albert, Offenbach-on-the-Main, Germany, to General Aniline Works, New York City.

Method recovering lactoflavin by extracting with aqueous acetone an inorganic adsorbent containing said flavin. No. 2,186,314. Stefan Ansbacher, Sidney, and George E. Flanigan and George C. Supplee, Bainbridge, N. Y., to The Borden Company, New York City.

Preparation a halo-aryl ether of the type: $C1\text{-}C_nH_{n'}\text{-}CH(R)\text{-}O\text{-}aryl\text{-}X_{n'}$, where n and n' are integers, aryl a benzene ring, and X halogen attached to the nucleus of said aromatic ring. No. 2,186,367. Gerald H. Coleman and George B. Stratton, Midland, Michigan, to The Dow Chemical Co., Midland, Mich.

Production mercaptothiazoles from dithio-carbamates. Nos. 2,186,419-21. Roger A. Mathes, Akron, Ohio, to The B. F. Goodrich Co., New York City.

Manufacture vinyl esters, comprising reacting acetylene with a carboxylic acid in the presence of a mercury salt of a heteropoly acid. No. 2,186,437. Walter J. Toussaint, Charleston, W. Va., to Carbide and Carbon Chemicals Corp., a corp. of N. Y.

Manufacture lower alkanal condensates with polyamido-alcohols of the aliphatic series. No. 2,186,464. Ernst Alfred Mauersberger, Maarssen, near Utrecht, Netherlands, to Alframine Corporation, New York City.

Diazonium Compounds and Process of manufacture comprising addition of nitrating agent to certain reaction medium in sufficient quantity to mono-nitrate aryl diazo compound, Reaction medium kept at 0°-25° C. until normal mono-nitro-aryl-diazonium compound is formed. No. 2,186,722. Ivan Gubelmann, Wilmington, Del., and John M. Tinker, Penns Grove and Louis Spiegler, Woodbury, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Method separating mixture of aromatic imide and a water and dilute alkali insoluble aromatic di-nitrile. No. 2,186,754. Vito Giambalvo, Bklyn., N. Y., to Interchemical Corp., N. Y. City.

Method manufacture of basic substituted carboxylic acid amides by condensation of certain carboxylic acids and amines. No. 2,186,769. Erik Schirm, Dessau, Anhalt, Germany, to Deutsche Hydrierwerke Aktiengesellschaft, Berlin-Charlottenburg, Germany.

Preparation new compound 2 (p-nicotinylaminobenzenesulfonamide) pyridine or nicotinyl sulfapyridine. No. 2,186,773. Elmer H. Stuart, to Eli Lilly & Co., both of Indianapolis, Ind.

Process conversion of a keto-compound of cyclopentano-10,13-dimethyl-polyhydro-phenanthrene series into corresponding hydroxyl compound of same series by means of yeast containing fermenting solution. No. 2,186,906. Luigi Mamoli, Berlin-Lichterfelde, Germany, to Schering Corporation, Bloomfield, N. J.

Process producing fluorine-containing derivative of compound of group of synthetic rubber like masses comprises contacting compound with fluorine diluted by indifferent gas. No. 2,186,917. Peter J. Gaylor, Union, N. J., to Standard Oil Development Co., a corp. of Delaware.

Mixture of isomeric polyisopropyl halo-benzenes. No. 2,186,960. R. Dreisbach and G. Heusted, to Dow Chemical Co., all of Midland, Mich.

Preparation crystalline double salt of calcium lactobionate and calcium bromide, formula—$Ca(C_{12}H_{23}O_{12})_2.CaBr_2.6H_2O$. No. 2,186,975. H. S. Isbell, Washington, D. C., to the Government of the United States.

A trialkylacetamide of strong spasmolytic action, having between 12 and 17 carbon atoms. No. 2,186,976. K. Junkmann, Berlin, and H. Allardt, Phillippstahl, Kreis Tetlow, Germany, to Schering Aktiengesellshaft, Germany.

Process making polymers comprises heating epoxy compound having oxygen atom linked to aliphatic hydrocarbon radical with active earth catalyst. No. 2,187,006. A. Alvarado and H. Holt, to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Process producing alkylated aromatics comprises subjecting mixture of aromatic hydrocarbon and high molecular weight olefin than butylene to depolyalkylation. No. 2,187,034. V. Ipatieff and H. Pines, to Universal Oil Prod. Co., all of Chicago, Ill.

Process purifying lead nitrate solutions comprising removal of copper by employing excess alkaline earth metal ferrocyanide to precipitate cupric ferrocyanide. No. 2,187,108. B. Barrett, Newark, N. J., to du Pont de Nemours & Co., Wilmington, Del.

Preparation organic sulfonates comprising conversion of sulfonates of one cation to sulfonate of another cation. No. 2,187,144. A. Bell, G. Miles, K. Russell, N. Y. City, to Colgate-Palmolive-Peet Co., Jersey City, N. J.

Process coagulating aqueous dispersion of halogen-2-butadiene-1,3 polymer comprising freezing dispersion in mass having one dimension less than 0.1 inch. No. 2,187,146. W. Calcott, Woodstown, N. J., and H. Starkweather, New Castle County, Del., to du Pont de Nemours & Co., Wilmington, Del.

Process making para-secondary alkylamino-benzaldehydes. No. 2,187,328. W. Richter, Halle-on-the-Saale, Germany, to General Aniline Works, Inc., N. Y. City.

Secondary alkyl monosulfonates containing 17 carbon atoms. No. 2,187,338. J. Werntz, to du Pont de Nemours, both of Wilmington, Del.

Secondary alkyl monosulfonates containing 19 carbon atoms. No. 2,187,339. J. Werntz, to du Pont de Nemours, both of Wilmington, Del.

Arylides of 2,3-hydroxynaphthoic acid. No. 2,187,455. W. Kern, Sissach and R. Tobler, Riehen, Switzerland, to Society of Chem. Ind., Basle, Switzerland.

Acetals of carbonyl compounds, containing free carboxylic acid groups with compounds of group consisting of polyvinyl alcohol and its derivatives containing free hydroxyl groups. No. 2,187,570. Georg Kranzlein & Ulrich Lampert, to I. G. Farbenindustrie Aktiengesellschaft, both of Frankfort-on-the-Main, Germany.

Geramyl Crotonate, colorless, liq., fragrant odor, B.P. 128° C. at .1 inch abs. pres.. Sp. Gr. .914 at 25°/25° C. No. 2,187,694. Harold R. Slagh, to the Dow Chemical Co., both of Midland, Mich.

5-Alkyl 5-(1-Methyl-Δ_1-Butenyl) barbituric acids where alkyl group has 1 to 3 carbon atoms. No. 2,187,703. Arthur C. Cope, Bryn Mawr, Pa., to Sharp & Dohme, Inc., Phila., Pa.

5-Alkyl 5-Δ_1-Alkenyl N-Alkyl barbituric acids where 5-Δ_1-Alkenyl group is open chain of at least 3 carbon atoms. No. 2,187,702. Arthur C. Cope, Bryn Mawr, Pa., to Sharp & Dohme, Inc., Phila., Pa.

Secondary 5-Δ_1 Alkenyl N - Alkyl Barbituric acids where 5-Δ_1-Alkenyl group is open chain of at least 3 carbon atoms. No. 2,187,701. Arthur C. Cope, Bryn Mawr, Pa., to Sharp & Dohme, Inc., Phila., Pa.

Primary 5-Δ_1 Alkenyl barbituric acids where Δ_1-Alkenyl group has at least 3 carbon atoms. No. 2,187,705. Walter H. Hartung, Baltimore, Md., & Frank S. Crossley, Phila., Pa., to Sharp & Dohme, Inc., Phila., Pa.

Industrial Chemicals

Production unsaturated cyclic compounds by passing a mixture of cyclohexane with a minor proportion of its monochloride over a dehydrogenchlorination catalyst at 400-500° C. No. 2,183,574. Arthur A. Levine and Oliver W. Cass, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production a re-moistening adhesive, comprising a dispersed amylaceous substance, urea, and an alkali metal acetate. No. 2,183,736. Hans F. Bauer, to Stein, Hall Manufacturing Co., both of Chicago, Ill.

Manufacture high B. t. u. carbureted water gas suitable as a natural gas substitute. No. 2,183,845. Leon E. Osmer, Western Springs, Ill., and William Tiddy, New York City, to Semet-Solvay Engineering Corp., New York City.

Method reacting alkali metal with a polycyclic aromatic hydrocarbon, comprising employing a reaction medium containing sufficient of a polyether of the group: glycol formal, methyl glycerol formal, and dimethylene pentaerythrite. No. 2,183,847. Norman D. Scott, Sanborn, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Manufacture ethylene sulfide, comprising reacting 1-chloro-ethane-thiol-2 with alkali metal bicarbonate in water solution, the bicarbonate solution being used in sufficient amount to maintain the pH at 7.5-9.5. No. 2,183,860. Willem Coltof, Amsterdam, Netherlands, to Shell Development Co., San Francisco, Calif.

Process dehydrating lignite by a thermal treatment under a hydrocarbon oil boiling higher than water. No. 2,183,924. Eugene P. Schoch, Austin, Texas.

Production casein, comprising mixing atomized warm skim milk spray with atomized spray of mineral acid, thereby obtaining a completely-precipitated curd. No. 2,184,002. Lawrence C. Pagel, Madison, Wisc.

Production hydrocyanic acid, comprising reacting nitric acid with excess hydrocarbon, in the absence of catalyst, at 800-1400° C., the reaction occurring initially in the presence of at least 1 vol. water vapor and 2-10 vols. of inert gas per vol. nitric oxide present. No. 2,184,062. Charles Roberts Harris, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Sintering of fluorspar, wherein the pulverized mineral is admixed with a moistened, inorganic, plastic material, made into pellets, and so sintered. No. 2,184,078. Reed W. Hyde, Summit, N. J.

Production butadiene by distilling butylene-diol-1,3 with aromatic sulfonic acids. No. 2,184,164. Martin Mueller-Cunradi, Ludwigshafen-on-the-Rhine, and Heinz Krekeler, Mannheim, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Manufacture a wood coke whose structure is substantially entirely of cell walls corresponding to the wood from which the charcoal was made. No. 2,184,317. Stevan Ruzicka, Beograd, Yugoslavia.

Method treating a fabricated body of glass fiber composed in part of an alkali ingredient, comprising applying to the surface of said fibers throughout said body, a strong mineral acid capable of neutralizing free alkali on the surface of said fibers. No. 2,184,320. Donald C. Simpson, Newark, Ohio, to Owens-Corning Fiberglas Corp., a corp. of Delaware.

Production anhydrous ferric sulfate, comprising furnacing solid ferrous sulfate in contact with 30-60% excess of sulfuric acid, at 525-840° F. No. 2,184,419. Theodore V. Fowler, Pelham, N. Y., and Henry F. Merriam, West Orange, N. J., to General Chemical Co., New York City.

Manufacture gelatin from gelatinous materials, wherein a lime suspension is added, together with non-tertiary amine containing no negative group. No. 2,184,494. John Vernon Stuart Glass, Sutton Weaver, near Warrington, England, to Imperial Chem. Industries, Ltd., a corp. of Great Britain.

Manufacture a basic sulfamate of tetravalent titanium, comprising reacting titanium tetrachloridein aqueous solution with a sulfamate whose cation forms an insoluble chloride. No. 2,184,538. Charles W. J. Wende, to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

Purification of sugar juices by adding lime or equivalent alkali to bring the pH within the isoelectric zone of the purities to be precipitated, adding SO_2 or equivalent acidic agent to reduce very slightly the pH while remaining in the isoelectric zone, and then adding more alkali such that the pH permits maximum speed of precipitation of the impurities. No. 2,184,570. Dario Teatini, Hougaerde, Belgium.

Process for treating and liquefying hydrocarbon gases. No. 2,184,596. Arthur John Lindsay Hutchinson, Palo Alto, Calif., to The Fluor Corporation, Ltd., Los Angeles, Calif.

Production tanning agents from lignin sulfonic acids. No. 2,184,622. Gustav Mauthe and Hermann Noerr, Opladen, near Cologne, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Process treating crude ethereal oils, comprising emulsifying with a fermenting culture medium for yeast and bacterial acid formers, and allowing fermentation to take place, and afterward separating the oils

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 169

from the ferment. No. 2,184,637. Willy Ekhard, Berlin-Pankow, Germany.

Pressure synthesis of sulfuric acid, wherein a sulfuric acid solution of nitrosyl sulfuric acid is reacted with roast gases containing SO_2, at 30-50 atmos., whereby SO_2 oxidation occurs in the liquid phase in the nitrosyl sulfuric acid solution. No. 2,184,707. Ernst Berl, Allegheny County, Pa.

Preparation sulfonated aromatic complexes. No. 2,184,770. Morris B. Katzman, to The Emulsol Corporation, both of Chicago, Ill.

Preparation mixed fatty esters of glycerine containing sulfonated aliphatic radicals. No. 2,184,794. Melvin De Groote, University City, Mo., to Petrolite Corporation, Ltd., a corp. of Delaware.

Manufacture lead arsenate from given quantities of lead oxygen compound and arsenic acid in a 2-phase reaction. No. 2,184,890. James W. Swaine, Bayside, N. Y., to General Chemical Co., New York City.

Method recovering ammonia vapors and heat from used cuprammonium silk precipitation liquors. No. 2,184,923. Alfred Haltmeier, Cologne, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Vapor-phase conversion of alpha-hydroxy-isobutyric acid esters to the corresponding methacrylates, by catalytic dehydrogenation at 325-425° C. No. 2,184,934. Herman A. Bruson and Robert N. Washburne, Philadelphia, Pa., to Rohm & Haas Co., Philadelphia, Pa.

Production sulfonated aromatic ether alcohols. No. 2,184,935. Herman A. Bruson and Clinton W. MacMullan, to Rohm & Haas Co., all of Philadelphia, Pa.

Method absorbing a gas into a liquid and chemically absorbing said gas from the liquid into a colloidally suspended solid in the liquid; then discharging said gas from the solid into said liquid and out of the liquid. No. 2,185,040. Harry F. Smith and Charles E. Waring, Dayton, Ohio, to General Motors Corp., Dayton, O.

Regeneration of ferrous sulfate waste liquors from the sulfuric acid treatment of ferrous material, to recover ferrous sulfate monohydrate. No. 2,185,095. Rowland P. Smith, Stamford, and John Belding, Old Greenwich, Conn., to Chemical Construction Corp., New York City.

Manufacture substantially non-aqueous coating solutions of zein in various aliphatic alcohols and glycols of low M. W. Nos. 2,185,111-116. Roy E. Coleman, Meriden, Conn., to The Zein Corp. of America, a corp. of Del.

Manufacture substantially non-aqueous coating solutions of zein in an alcohol ether. No. 2,185,117. Roy E. Coleman, Meriden, Conn., to The Zein Corp. of America, a corp. of Del.

Manufacture substantially non-aqueous coating solution of zein in diethylene glycol. No. 2,185,118. Roy E. Coleman, Meriden, Conn., to The Zein Corp. of America, a corp. of Delaware.

Manufacture substantially non-aqueous coating solution of a prolamin in a high-boiling, closed-chain alcohol. No. 2,185,119. Roy E. Coleman, Meriden, Conn., to The Zein Corp., of America, a corp. of Delaware.

Manufacture substantially non-aqueous coating solution of a prolamin in a relatively high-boiling diacetone alcohol solvent. No. 2,185,120. Roy E. Coleman, Meriden, Conn., to The Zein Corporation of America, a corp. of Delaware.

Manufacture a heat-hardening, liquid coating composition, comprising a solution of a prolamin and a water-insoluble carbamid-aldehyde resin dispersed uniformly therein, said solution being a prolamin and a substantially neutral, hydroxy organic solvent for the prolamin containing not in excess of 5% water. No. 2,185,121. Roy E. Coleman, Meriden, Conn., to The Zein Corporation of America, a corp. of Delaware.

Manufacture polyoxyalkylene ammonium compounds. No. 2,185,163. Heinrich Ulrich, Ludwigshafen-on-the-Rhine, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Manufacture a stabilized alkali-metal alcoholate containing a minor amount of an anti-oxidant of the class including amines, amides, and amine hydrochlorides—each of which is free of pro-oxidizing substituents. No. 2,185,247. George Lewis Cunningham and Richard Sewall Robinson, Niagara Falls, N. Y., to The Mathieson Alkali Works, Inc., N. Y. City.

Manufacture a dextrinized starch product, comprising cooking starchy material to partially gelatinize the starch, mixing the cooked material with a slightly acid solution of mono-calcium phosphate, calcium sulfate, and ammonium chloride. No. 2,185,368. William Spencer Bowen, Westfield, N. J.

Method increasing the drying properties of weak drying and semi-drying oils, comprising heating said oils at 200-250° C. for 2-18 hours with about 0.1% of an alkaline hydroxide. No. 2,185,427. Karl Brodersen, Matthias Quaedvlieg, and Max Zabel, Dessau in Anhalt, and Albert Schneider, Leipzig, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Method stabilizing pectin raw material against deterioration by adding 1-4% glycerine thereto. No. 2,185,472. Philip Bliss Myers, Scarsdale, N. Y. and William W. Cowgill, Fairfield, Conn., to Sardik, Incorporated, Jersey City, N. J.

Production of ethylene by a continuous cracking cycle, in which hydrocarbons are thermally decomposed in the presence of a current of steam. No. 2,185,566. Frank Porter, Syracuse, N. Y., and John Moyle Duncan, Petersburg, Va., to The Solvay Process Co., New York City.

Manufacture nitric acid by reacting nitrogen peroxide with aqueous liquid in the presence of chlorine, forming acid and nitrosyl chloride; the last being oxidized to form more nitrogen peroxide and chlorine. No. 2,185,579. Herman A. Beekhuis, Jr., Petersburgh, Va., to The Solvay Process Co., New York City.

Process for nitric acid, wherein nitrogen peroxide and an aqueous nitric acid are contacted to form a stronger acid solution. No. 2,185,580. Herman A. Beekhuis, Jr., Petersburg, Va., to The Solvay Process Co., New York City.

Preparation a dispersible thiocarbanilide wherein the individual particles are coated with a film of readily-rehydrated hydrophilic agent. No. 2,185,591. David W. Jayne, Jr., Port Chester, N. Y., to American Cyanamid Co., New York City.

Method for efficiently starting the cycle in the continuous catalytic oxidation of ammonia to produce oxides of nitrogen. No. 2,185,607. Ralph S. Richardson, Scarsdale, N. Y., to Chemical Construction Corp., New York City.

Method bleaching a surface, comprising applying thereto while in a liquid condition a bleaching agent which will gel to a paste-like consistency; said agent consisting of a mixture of sodium silicate (80-120 Tw.) and hydrogen peroxide. No. 2,185,632. Wilfred Bedggood Hill, Runcorn, and Bertram Pusey Ridge, Latchford, Warrington, Eng., to Imperial Chemical Industries, Limited, a corp. of Great Brtiain.

Method stabilizing ethylene sulfide in storage, comprising adding thereto an amount of hydrogen sulfide. No. 2,185,660. Willem Coltof and Siegfried Leonard Langedijk, Amsterdam, Netherlands, to Shell Development Co., San Francisco, Calif.

Production a compound of high active chlorine content, comprising evaporating a mixture of urea and hydrochloric acid to substantial dryness, and chlorinating the resultant product. No. 2,185,864. Irving E. Muskat, Akron, and Fred C. Trager, Barberton, Ohio, to Pittsburgh Plate Glass Co., Allegheny County, Pa.

Process stabilizing the natural green color of vegetables during canning and storage, comprising a series of treatments in sodium bicarbonate and then sodium chloride, followed by packing hermetically in mixture of aqueous calcium and magnesium hydroxides. No. 2,186,003. James S. Blair, Maywood, Ill., to American Can Co., N. Y. City.

Process separating organic acids from their admixture with oily material, comprising treating said oily material containing said acids with a basic reagent of higher volatility than said acids—whereby distillable, insoluble soaps are formed—and dissociating said soaps by distillation to separately recover the organic acids and basic reagent. Nos. 2,186,-248-9. Arthur Lazar, Associated, Calif., to Tide Water Associated Oil Co., San Francisco, Calif.

Manufacture a sulfonated oil, comprising reacting fatty oil with sulfuric acid to produce same, treating the reaction mixture with an aqueous salt solution and settling, separating and alkalizing the sulfonated insoluble product. No. 2,186,308. Charles Leonard Schuttig, Ridgefield Park, N. J., to Arkansas Company, Inc., New York City.

Production ammono alcohols, comprising reacting ammonia or primary amine with a salt of a weak acid and of an amino compound of the described group, and with an aliphating agent. No. 2,186,392. Arthur Ferdinand August Reynhart, Beverwijk, Netherlands, to Shell Development Co., San Francisco, Calif.

Process recovering sulfur dioxide from gases containing same, essentially comprising a flow absorption method using dimethyl aniline. No. 2,186,453. George H. Gleason, Montclair, N. J., and Alfred C. Loonam, Brooklyn, N. Y., to Guggenheim Brothers, New York City.

Method separating acetic acid from tarry components of pyroligneous liquid. No. 2,186,617. Donald F. Othmer, Brooklyn, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Production liquid products by catalytic treatment of normally gaseous olefin hydrocarbons at temperature 550-1000° F. No. 2,186,688. John Charles Walker, to Cities Service Oil Co., all of Bartlesville, Okla.

Process comprises bringing together streams of sulfonating agent and aliphatic alcoholic hydroxy compound and delivering reactants to a reaction arresting treatment at proper time. No. 2,187,244. V. Mills, to Procter & Gamble Co., both of Cincinnati, O.

Production carbon disulfide, vapor phase reaction, step of reacting at 800-1000° C. in presence of metal sulfide catalyst. No. 2,187,393. M. de Simó, Piedmont, Calif., to Shell Development Co., San Francisco, Calif.

Metals, Alloys

Iron alloy as a German silver substitute, containing 7-50% manganese, 6-25% chromium, 0.5-10.0% copper, and up to 0.4% carbon. No. 2,-184,305. Alfred Kropf, Wetzlar, Lahn, Germany.

Recovery of sodium tetraborate from its admixture with water-insoluble minerals, comprising mixing the finely-divided ore with saturated sodium tetraborate, and froth-floating the tetraborate from the pulp, with the aid of a fatty barium soap. No. 2,184,558. Plato. Malozemoff and Merrill W. MacAfee, Oakland, and Miles W. Kisrk, Berkeley, Calif., to Pacific Coast Borax Co., a corp. of Nev.

Aluminum-base alloy, containing 3-16% magnesium, 0.2-4.0% zinc, and at least one metal forming an aluminide. No. 2,184,693. Adolf Beck and Hans Bohner, Bitterfeld, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Production magnetic alloys of zirconium, containing nickel, iron, or cobalt. No. 2,184,769. Peter Popow Alexander, Marblehead, Mass., to Metal Hydrides, Inc., Marblehead, Mass.

Removal of iron from titanium-bearing ores, comprising subjecting an intimate admixture of the ore with carbon to the action of a controlled amount of chlorine and an independently controlled amount of oxygen at above 500° C., such that a maximum of iron chloride and a minimum of titanium chloride is volatilized. Nos. 2,184,884-5. Irving E. Muskat and Robert H. Taylor, Akron, Ohio, to Pittsburgh Plate Glass Co., Allegheny County, Pa.

Method recovering metals from dilute solutions of metal-ammonia complexes in water, comprising essentially trapping the metal in a granular filter of particles of a phenol-formaldehyde resin containing sulfonic acid radicals. No. 2,184,943. Karl Pattock, Wolfen, Kreis Bitterfeld, and Hans Wassenegger, Dessau in Anhalt, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Manufacture a substantially dustless solid or plastic aggregate of metal powder, comprising mixing said metal powder with a binding liquid (½-10%), and subjecting the mixture to high pressure. No. 2,185,194. Clarence P. Harris, New York City.

Process concentrating phosphate minerals, comprising agitating a pulp of the ore with 2-5 lbs. per ton of a short-chain amino compound of the cationic type, with substituents having 2-5 carbon atoms in the molecule—whereby the clay is rendered water-repellent; the resulting tailing is agitated with a mineral oil and a cationic substituted ammonium compound with 1-4 substituents having over 12 carbon atoms, in the presence of a metal salt of iron and aluminum—whereby the quartz particles are made water-repellent; the tailing is collected as a relatively rich phosphate. No. 2,185,224. Oliver C. Ralston, Hyattsville, Md., to Government of the United States, as represented by the Secretary of the Interior.

Production an inorganic insulating material consisting in fusing at 1310-1360° C. a mixture of major amounts of potassium silicate fluoride, magnesia, and quartz together with lesser proportions of sodium calcium silicate and alumina. No. 2,185,280. Karl Stuckardt, Berlin-Charlottenburg and Reinhold Reichmann, Berlin, Germany, to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Production an aluminum alloy containing 0.05-15% antimony and a metal of the tungsten group in amounts up to 3%. No. 2,185,348. William E. Mansfield, Garfield Heights, Ohio.

Manufacture a molybdenum tool steel containing vanadium, boron, chromium, and cobalt. No. 2,185,616. Elmer B. Welch, McKeesport, and Lewis Gerald Firth, Pittsburgh, Pa., to Firth-Sterling Steel Co., a corp. of Pa.

Copper-zinc alloy, characterized by being cold-workable, tough, ductile, of high tensile strength and electrical conductivity. No. 2,185,809. Stephen P. Hackley, Stratford, Conn., to The Bridgeport Rolling Mills Co., Bridgeport, Conn.

Electrolytic method for removing gold, or other precious metals, from copper compositions containing same. No. 2,185,858. Sumner R. Mason, Wilmette, Ill., to Western Electric Co., Inc., New York City.

Copper alloy of high tensile strength, containing about 3.5% silicon, 0.5% nickel, 1.0% iron. No. 2,185,957. Elmore S. Strang, New Haven,

U. S. Chemical Patents
Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 169

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 170

and Richard O. Farmer, Seymour, Conn., to The New Haven Copper Co., Seymour, Conn.

Corrosion-resistant iron alloy, containing 23-30% nickel, 17-22% chromium, 0.5-2.0% silicon, 3-5% copper, 2-4% molybdenum, and up to 0.12% carbon. No. 2,185,987. James A. Parsons, Jr., to The Durion Co., Inc., both of Dayton, Ohio.

Method producing decorative articles comprises forming approximate shape from heavy metal, spraying molten aluminum on the metal to provide an uneven porous surface, electroplating to superimpose an oxide film, then applying dye-containing solution. No. 2,186,721. Lurelle Guild, Darien, Conn.

Method recovering gold from auriferous saprolite ores. Comprises cyaniding a pulp of the ore, treating with charcoal, and subjecting to flotation process in presence of reagent favorable to flotation of auriferous carbon. No. 2,186,779. Bruce D. Crawford, Grass Valley, Calif., to American Cyanamid Co., N. Y. City.

Process printing on gold sheet metal base comprises forming mask design upon sheet, depositing silver on design, removing mask, plating entire surface of mask with metal chosen from platinum group of metals. No. 2,186,858. Everard Tuxford Digby, London, Eng.

Process recovering mercury from ores containing mercury sulfide and an antimony compound comprises heating in non-oxidizing atmosphere where mercury sulfide is volatilized without volatilizing other elements. No. 2,186,876. Harold B. Menardi, Los Angeles, Calif.

Method forming metal element having pores filled with solid lubricant comprises sintering powdered metal under non-oxidizing conditions to form porous layer, then impregnating with lubricant. No. 2,187,086. R. Koehring, Dayton, Ohio, to General Motors Corp., Detroit, Mich.

Alloy composed of .05 to 15% Mg, .25 to 5% Ni, balance substantially silver. No. 2,187,379. F. Henzel and K. Emmert to P. R. Mallory & Co., all of Indianapolis, Ind.

Process recovery molybdenum from materials containing sulfates by precipitation of sulfates with compound of element of group consisting of Ba and Sr. No. 2,187,468. J. Sullivan and D. Niconoff to Battelle Memorial Institute, Columbus, Ohio.

Article of welded construction for use in chemical and metallurgical fields, having good corrosion-resisting properties. No. 2,187,525. Paul Schafmeister and Eduard Houdremont, Essen, Germany, to Krupp Nirosta Co., Inc., N. Y. C.

Method preventing corrosion porous iron articles by oxidizing to a superficial depth. No. 2,187,589. F. Lenel, Dayton, Ohio, to General Motors Corp., Detroit, Mich.

Method providing non-oxidizing atmosphere in making sheet metal by hot rolling. No. 2,187,584. R. Wean, to The Wean Engineering Co., Inc., both of Warren, O.

Alloy for cutting tools contains 30-60% columbium and tantulum, 10-30% zirconium, 10-30% yttrium, 2-20% molybdenum, 2-20% iron. No. 2,187,630. C. G. Schafer, Baltimore, Md.

Paper and Pulp

Manufacture an uncoated paper having an alkaline filler, surface-sized with a soya bean protein material. No. 2,183,858. Joseph A. Warren, Westbrook, Maine, to S. D. Warren Co., Boston, Mass.

Manufacture a purified wood pulp having a viscosity above a predetermined minimum. No. 2,185,776. Lyle Melvin Sheldon, Lionel Elmer Goff, Milton L. Herzog, and Fredrich Olsen, East Alton, Ill., to The Cellulose Research Corp., East Alton, Ill.

Manufacture a bleached paper material. No. 2,186,034. Harold R. Murdock, Canton, N. C., to The Champion Paper & Fibre Co., Canton, N. C.

Method coating ferrous metal surfaces with an aqueous phosphate solution. No. 2,186,177. Gerald C. Romig, Melrose Park, Pa., to American Chemical Paint Co., Ambler, Pa.

Method utilizing sodium sulfide as a basic flux for treating reducible molybdenum and copper compounds to form a molybdenum alloy thereof. No. 2,186,447. Joseph H. Brennan, Niagara Falls, N. Y., to Electro Metallurgical Co., a corp. of W. Va.

Safety paper incorporating substance whose molecular structure includes atomic grouping N-C-C-N, each of carbon atoms being contained in separate ring structure and at least one of nitrogen atoms being attached to one of said carbon atoms by double bond. No. 2,186,810. Francis L. Simons, Needham, Mass., to George La Monte & Son, Nutley, N. J.

Process manufacturing paper having controlled quantities of mineral incorporated on opposite sides to produce paper of superior finish adaptable for color reproduction. No. 2,186,874. James O. Mason, Chillicothe, Ohio, to K-C-M Co., Dayton, Ohio.

Method coating embossed paper consists of spreading layer of cellulose solution upon horizontal sheet of embossed coverstock and immediately applying suction to under surface. No. 2,186,957. W. Collings and J. Hoeltzel to Dow Chemical Co., all of Midland, Mich.

Process treating ground wood comprises subjection to alkaline peroxide bath acid sulfite bath No. 2,186,016. K. Craig, Appleton, Wisc., to Paper Patents Co., Neenah, Wisc.

Petroleum

Method for hydrating propylene, consisting in maintaining intimate contact of propylene with sulfuric acid (about 60% conc. by wt.) at 100° C. and at a pressure not less than 300 lbs. gage. No. 21,314. Reissue. Alfred W. Francis, Woodbury, N. J., to Socony-Vacuum Oil Co., Inc., a corp. of New York.

Process decolorizing oils by mixing therewith an absorbent magnesium silicate of adjustable water content, according to the temperature at which the decolorizing process is to be carried out. No. 2,183,590. Ernest Wayne Rember, Plainfield, N. J., to Johns-Manville Corp., New York City.

Method increasing the octane number of a gasoline stock, comprising passing its vapors over a bauxite-chrome oxide prepared catalyst at 800-1100° F. with careful control of the flow rate and pressure. No. 2,183,591. Walter A. Schulze, Bartlesville, Okla., to Phillips Petroleum Co., a corp. of Delaware.

Method desulfurizing sulfur-bearing petroleum light oil distillates, comprising passing their vapors over a porous zinc oxide at 400-650° F. No. 2,183,782. Ulric B. Bray, Palos Verdes Estates, Calif., to Union Oil Co. of California, Los Angeles, Calif.

Lubricating oil, consisting of a large proportion of refined spray oil of high de Ong number and low viscosity, and refined, viscous, paraffinic fraction of relatively greater viscosity. No. 2,183,783. Ulric B. Bray, Palos Verdes Estates, Calif., to Union Oil Co. of California, Los Angeles, Calif.

Method extracting organic acid-reacting compounds contained in water-insoluble neutral or basic organic liquid, comprising extraction with aqueous propylene glycol to absorb the acidic impurities. No. 2,183,801. David Louis Yabroff, Berkeley, Calif., to Shell Development Co., San Francisco, Calif.

Recovery of mercaptans from hydrocarbon distillates, comprising treating the latter with a caustic soda solution, thereby removing components more acid than the mercaptans, and then chilling the mixture to absorb and precipitate the mercaptans from solution. No. 2,183,968. Thomas F. McCormick, Oakland, and Arthur Lazar, Berkeley, Calif., to Tidewater Associated Oil Co., San Francisco, Calif.

Conversion petroleum hydrocarbons to yield both gasoline of high antiknock value and a gaseous hydrocarbon mixture high in readily-polymerizable olefins. No. 2,184,069. Charles H. Angell, to Universal Oil Products Co., both of Chicago, Ill.

Production polymerization charging stock from the separated pressure distillate of substantially gasoline boiling range and normally uncondensable gases produced in the cracking of hydrocarbon oil. No. 2,184,096. Clarence G. Gerhold, to Universal Oil Products Co., Chicago, Ill.

Dehydrogenation catalyst for treating hydrocarbons, being a mixture of alumina and chromium oxide, the former in substantial excess by weight. Nos. 2,184,234-5. Herbert P. A. Groll and James Burgin, Oakland, Calif., to Shell Development Co., San Francisco, Calif.

Production a Diesel fuel having improved ignition characteristics and substantially free of sulfur, comprising sweetening with sodium plumbite a stove distillate from an oil of the Winkler type, and then distilling the doctored distillate such that a reduced bottom stock is formed suitable for adding to distillate fuel oils having undesirable ignition characteristics. No. 2,184,440. Bernard H. Shoemaker and Howard R. Batchelder, Hammond, Ind., to Standard Oil Co., Chicago, Ill.

Double solvent refining of petroleum lubricant fractions, comprising flowing a paraffinic solvent and a naphthenic solvent countercurrent through a series of stages each consisting of a mixing step and a settling step. No. 2,184,838. Douglas L. Hooker, Woodbury, N. J. and Carl M. Fabian, Beaumont, Texas, to Socony-Vacuum Oil Co., Inc., New York City.

Continuous vapor-phase catalytic hydrogenation of unsaturated hydrocarbons containing a quantity of catalyst poisonous compounds, whereby reduction to the corresponding saturates proceeds with a minimum of loss of catalyst potency. No. 2,184,930. Jan D. Ruys, and Ewald D. Pyzel, Pittsburgh, Calif., to Shell Development Co., San Francisco, Calif.

Preparation a stabilizer compound for adding to lubricating or insulating oils, comprising selectively hydrogenating an aromatic, liquid SO_2—soluble extract of a mineral lubricant oil containing olefinic and non-hydrocarbon impurities, to eliminate the major part thereof and to yield an aromatic extract, and adding the last to said lubricating or insulating oils. No. 2,184,944. Adrianus Johannes van Peski, Amsterdam, Netherlands, to Shell Development Co., San Francisco, Calif.

Process for polymerizing fatty oils with boron fluoride, comprising treating the oils in solution in a halogenated gaseous hydrocarbon, adding the fluoride, and polymerizing at about 25° C., stopping the reaction before the polymer becomes insoluble. No. 2,184,957. Anthony H. Gleason and Raphael Rosen, Elizabeth, N. J., to Standard Oil Development Co., a corp. of Delaware.

Counter-current solvent extraction process for lubricating oils. No. 2,184,961. August Schlageter, N. D. de Gravenchon, Seine Inférieure, France, to Standard Franco-Américaine de Raffinage, a corp. of France.

Method recovering and stabilizing ketene as obtained in the pyrolysis of organic compounds. No. 2,184,963. Karl T. Steik, Montclair, N. J., to Standard Oil Development Co., a corp. of Del.

Conversion of higher boiling hydrocarbon oils into oils of lower boiling characteristics by thermal cracking. No. 2,185,041. Victor Stapleton, Port Arthur, Texas, to The Texas Company, New York City.

Conversion high-boiling petroleum oil fractions into fractions of lower M. W., comprising essentially vapor-phase treatment in hydrogen gas with a high frequency, silent dark discharge of electric current. No. 2,185,070. Elbridge Webster Stevens, Baltimore, Md., to Wachovia Bank and Trust Co., Forsyth City, N. C.

Process for the production of gasoline from crude petroleum by a thermal cracking process. No. 2,185,200. Percival C. Keith, Jr., Peapack, N. J. and Joseph K. Roberts, Flossmoor, Ill., one-half to Standard Oil Co., Chicago, Ill., and one-half to Gasoline Products Co., Inc., Jersey City, N. J.

Process for the thermal cracking of hydrocarbon oils to produce motor fuel of high anti-knock value. No. 2,185,222. Charles W. Nofsinger, Summit, N. J., and David T. Shaw, Swarthmore, Pa., to Gasoline Products Co., Inc., Jersey City, N. J.

Extraction process for separating hydrocarbon oils into portions of different degrees of paraffinicity, involving the use of a selective solvent for non-paraffinic hydrocarbons in the presence of chloroform. No. 2,185,291. Johannes Arnoldus Buchel and Reyerus Nicolaas Jan Saal, Amsterdam, Netherlands, to Shell Development Co., San Francisco, Calif.

Method preventing the corrosive action of sulfur-bearing hydrocarbons upon the cracking chambers of the refining process, comprising continuously injecting into said hydrocarbons, upon attainment of an initial critical corrosive temperature, finely-divided iron dispersed in a carrier oil of relatively low sulfur content. No. 2,185,380. Thomas L. McGee, Rosemead, Calif., to Jenkins Petroleum Process Co., Chicago, Ill.

Conversion of gaseous olefins into liquids, comprising polymerizing the former in the presence of a halogen hydrocarbon having a double carbon linkage, in contact with an anhydrous aluminum halide. No. 2,185,405. Walter Flemming, Ludwigshafen-on-the-Rhine, and Wilhelm, Baumeister, Heidelberg, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Process refining a hydrocarbon oil of the group: benzol, toluol, xylol, or mixtures thereof, solvent naphtha, and drip oil, comprising essentially distilling the oil from an admixture with sulfuric acid solution. No. 2,185,414. Robert S. McKinney, Chevy Chase, Md.; dedicated to the free use of the People of the United States of America.

Method removing sulfur from sulfur-containing gasoline composed chiefly of olefinic polymers, comprising mixing the gasoline with aqueous sulfuric acid at a miscibilizing temperature, and recovering from the acid layer a gasoline of reduced sulfur content. No. 2,185,577. Alexis Voorhies, Jr., and Eldon E. Stahly, Baton Rouge, La., to Standard Oil Development Co., a corp. of Delaware.

Manufacture sulfonium sulfonates, comprising reacting an aromatic sulfonic acid, a dialkyl thio-ether, and an aliphatic primary alcohol, in the presence of an inert solvent at 100-200° C. No. 2,185,654. Adrianus

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 171

Johannes van Peski, and Johan Marius Hoeffelman, Amsterdam, Netherlands, to Shell Development Co., San Francisco, Calif.

Treating of hydrocarbon oil distillates to remove mercaptans, comprising treating with aqueous lead acetate containing litharge, separating the oil and water layers, and adding sulfur to the former to convert lead mercaptides into lead sulfide and dialkyl disulfides. No. 2,185,768. Warren W. Johnstone, to Universal Oil Products Co., both of Chicago, Ill.

Process controlling the temperature of a body of contact material in a converter chamber containing conduits for the circulation of heat transfer fluid. No. 2,185,929. Thomas P. Simpson, John W. Payne, and John A. Crowley, Jr., Woodbury, and Clark S. Teitsworth, Plainfield, N. J., to Socony-Vacuum Oil Co., Inc., New York City.

Method preparing a mixture of sulfur-free carbon monoxide and hydrogen for catalytic synthesis. No. 2,185,989. George Roberts, Jr., Montclair, N. J., to The M. W. Kellogg Co., New York City.

Polymerization of olefine hydrocarbons by contacting them with a film of polymerizing agent, said agent being distributed over and adsorbed upon the surface of particles of a non-porous, inert solid. Nos. 2,186,-021-2. Melvin M. Holm and William H. Shiffler, Berkeley, Calif., to Standard Oil Co. of California, San Francisco, Calif.

Method inhibiting action of methyl chloride refrigerant on copper tubing, comprising condensing and compressing said refrigerant in the presence of a mineral oil containing triphenyl guanidine. No. 2,186,028. Frederick L. Koethen, Niagara Falls, N. Y., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Production gasoline-type hydrocarbons from a mixture consisting substantially of hydrocarbons having less than 5 carbon atoms and containing normally gaseous olefin hydrocarbons. No. 2,186,031. Arthur L. Lyman, Berkeley, Calif., to Standard Oil Co. of California, San Francisco, Calif.

Production pulp from non-alkaline pulping highly resinous wood including southern pines containing more than 1% of combined tall oil. No. 2,186,295. Torsten Hasselstrom, New York City.

Method dewaxing waxed paper stock, comprising defibering said stock in aqueous medium, and adding to the fibers an aqueous mixture consisting of water-soluble emulsifier, and an alkali solution of a water-insoluble, alkali-soluble, acid-precipitatable acid-precipitable protein, and agitating the mixtures to form a stable emulsion of the waxy materials. No. 2,186,609. Otto Kress, Appleton, Wisc., to The Institute of Paper Chemistry, Neenah, Wisc.

Cutting oil, comprising light mineral lubricating oil (visc., 70-120 secs. Saybolt at 100° F.) and about 2-10% of an organic polysulfide. No. 2,186,271. Ernest Frank Pevere, Beacon, N. Y., to The Texas Company, New York City.

Conversion normally gaseous hydrocarbons into gasoline-type liquid products. No. 2,186,275. Le Roy G. Story, Bronxville, N. Y., to The Texas Company, New York City.

Recovery selective solvent particularly miscible with water, from mixture of solvent and mineral oil. No. 2,186,298. Wynkoop Kiersted, Jr., Scarsdale. and Loren P. Scoville, Flushing, N. Y., to The Texas Co., New York City.

Preparation cyclohexene, by heating cyclohexyl halide in the presence of an aluminum hydrosilicate bleaching clay. No. 2,186,370. Robert C. Dosser, to Dow Chemical Co., both of Midland, Mich.

Process removing acid from components from hydrocarbon distillates. No. 2,186,398. David Louis Yabroff, Berkeley, Calif., to Shell Development Co., San Francisco, Calif.

Separation naphthenic acids from hydrocarbon oils containing same, comprising contacting said oils at 300-475° C., in vaporous condition, with lithium carbonate for a time sufficient to decompose said acids (with liberation of CO_2), but insufficient to substantially crack the oils. No. 2,186,425. Franz Rudolf Moser, Amsterdam, Netherlands, to Shell Development Co., San Francisco, Calif.

Transparent, smooth-textured grease having a sodium soap content of 2-10%, water content of 0.01-0.25%, free alkali (0.01-0.10%), glycerine (0.0-0.5%), and hydrocarbon oil ((97.98-89.15%); said grease of such consistency that a 1-inch layer spread over newsprint is quite transparent for reading purposes. No. 2,186,514. Leonard W. Yagle, Kansas City, Mo., to Battenfeld Grease & Oil Corp., Kansas City, Mo.

Method increasing the concentration of olefins in a mixture containing both said olefins and paraffins. No. 2,186,524. Frederick E. Frey, Maryan P. Matuszak, and Robert D. Snow, Bartlesville, Okla., to Phillips Petroleum Co., Bartlesville, Okla.

Lubricant, comprising lubricating oil containing a small amount of the sulfurized ester of a lower mono- or dibasic alcohol and a higher organic acid. No. 2,186,646. Bert H. Lincoln and Waldo L. Steiner, Ponca City, Okla., to Continental Oil Co., Ponca City, Okla.

Process producing anti-knock motor fuel from crude oil containing gasoline by introducing crude into fractionating zone and contacting with cracked vapors. No. 2,187,048. J. Morrell to Universal Oil Prod. Co., both of Chicago, Ill.

Apparatus, separation of acid sludge from acid treated hydrocarbon oils. No. 2,187,466. C. Stratford to Stratford Development Corp., both of Kansas City, Mo.

Manufacture low boiling hydrocarbon oil comprises cracking heavy oil to higher and lower boiling products. No. 2,187,696. Harold V. Atwell, White Plains, N. Y., to Process Management Co., Inc., N. Y. City.

Production lubricating oils from hydrocarbon mixture by use of aluminum chloride as polymerization catalyst. No. 2,187,704. Nikolaus Geiser, Oberhausen-Holten and Herbert Goethel, Hamborn, Germany, to Ruhrchemie Aktiengesellschaft, Oberhausen, Holton, Germany.

Apparatus inhibiting polymerization of tar in hydrocarbon cracking, provides cooling and short exposure of tar to hot vapors. No. 2,187,708. Alois Cibulka, Highlands, and Maurice W. Mayer, Baytown, Tex., to Standard Oil Development Co., a corp. of Delaware.

Method refining hydrocarbons by subjecting hydrocarbon oil and gaseous C_2 hydrocarbons to separate thermal operations and common dephlegmating operation. No. 2,187,631. Herman C. Schutt, Tarrytown, N. Y., to American Locomotive Co., N. Y. C.

Pigments

Method reducing the oil adsorption of carbon black without diminishing its tinctorial value, comprising subjecting the black to attrition at elevated temperatures in a non-oxidizing atmosphere. No. 21,302. Reissue. Walther H. Grote, New York City, to United Carbon Co., Inc., a corp. of Maryland.

Fluorescent calcium pigment, being essentially a tungstate or molybdate of calcium and containing, as activators, about 0.5-3.0% samarium and 1% lead. No. 2,184,274. Gorton R. Fonda, Schenectady, N. Y., to General Electric Co., a corp. of New York.

Production a pigment chip, wherein a pigment and ethyl cellulose are milled together above about 100° C. until the pigment is uniformly dispersed throughout the ethyl cellulose colloid. No. 2,184,539. David R. Wiggam, Kennett Square, Pa., to Hercules Powder Co., Wilmington, Del.

Preparation thermally stable solid solutions of TiO_2 in zinc orthotitanate, comprising heating a zinc-oxygen compound and an unsaturated solid solution of TiO_2 in zinc orthotitanate, together with a titanium-oxygen compound and a small proportion of an inorganic phosphate. No. 2,-184,938. Sandford S. Cole, Metuchen, N. J., to National Lead Co., New York City.

Production a printing composition, comprising forming heat-coagulable powdered mixture of pigment, hydrophilic gum, and a combination of thermally non-coagulable vegetable protein and uncoagulated albumin. No. 2,185,181. Ruwin Bronsztajn, Hackensack, N. J.

Production an alkaline earth metal carbonate pigment, in particle form. No. 2,186,040. Joseph E. Plumstead, Elkton, Md., to Raffold Process Corp., Andover, Mass.

Method separating finely-divided zinc sulfide pigment in aqueous grinding suspension, comprising adding a small amount of an alkali metal pyrophosphate. No. 2,186,095. James E. Booge, Wilmington, Del., and Charles F. Opperman, Newark, N. J., to E. I. du Pont de Nemours & Co., Wilmington, Del.

Process producing stable titanium pigment by separately precipitating and washing aluminum oxide, blending with .1 to 10% thereof with aqueous suspension of calcined titanium pigment. No. 2,187,050. G. Patterson, to du Pont de Nemours & Co., both of Wilmington, Del.

Process rendering zinc sulfide-containing pigments stain resistant comprises incorporating minor quantity of insoluble metallic thio salt. No. 2,187,130. A. Lightbody, Elizabeth, N. J., to du Pont de Nemours & Co., Wilmington, Del.

Production of pigmented lacquers having a solvent, plasticizer, synthetic resin, and a mixed cellulose organic derivative as its constituents, the last being cellulose acetobutyrate or acetopropionate. No. 2,186,454. Walter E. Gloor, South River, N. J., to Hercules Powder Co., Wilmington, Del.

Resins, Plastics

Preparation a halogenated solid polymer of ethylene of M. W. in excess of 2000, and melting at 100-120° C. No. 2,183,556. Eric William Fawcett, Northwich, England, to Imperial Chemical Industries, Lt., a corp. of Great Britain.

Method for preheating and cooling a vinylidene chloride polymer prior to plastic deformation. No. 2,183,602. Ralph M. Wiley, to The Dow Chemical Co., both of Midland, Mich.

Production a highly polymerized vinyl resin comprising polymerizing a single vinyl ester of a lower saturated aliphatic acid in methyl acetate, the presence of the last permitting a high degree of polymerization. No. 2,183,642. Alfred W. Downes, South Charleston, W. Va., to Carbide & Carbon Chemicals Corp., a corp. of New York.

Method decolorizing coumarone-indene resin residues from by-product light oil distillation, comprising treating said resin in solution with aqueous weak acid containing finely-divided metal between Al and Sn, inclusive, in the electromotive series. No. 2,183,830. Samuel G. Burroughs, Pittsburgh, Pa., to Pennsylvania Industrial Chemical Corp., a corp. of Pennsylvania.

Condensation products derived from completely hydrolyzed proteins which have been acylated with higher sulfo-acids of the fatty series. No. 2,183,856. Georg Meyer, Cologne-Mulheim, Germany, to General Aniline Works, Inc., New York City.

Method treating cashew nut shell oil with an amide of the group: acetamide, benzamide, carbamide, biuret, formamide, oxamide, and succinamide. No. 2,183,958. Martha Blanchard Cayo, Germantown, Pa., to Durite Plastics, Inc., Philadelphia, Pa.

Moldable, inorganic salt plastic, comprising the joint precipitate of calcium sulfate, iron hydroxide, and a 2nd insoluble hydroxide; ratio, by weight, of sulfate to hydroxide in the composition being substantially 3/2. No. 2,184,271. Henry Seymour Colton, Shaker Heights, O., to H. Seymour Colton, M. J. Rentschler, and James A. Weeks, as trustees.

Continuous process for heteropolymeric resins from SO_2 and olefins, consisting in liquid-phase reaction of SO_2 and olefins, which are fed to a reaction zone containing a catalyst, and continuously recovering from said zone a solution of resinous product. No. 2,184,295. Frederick E. Frey, and Robert D. Snow, to Phillips Petroleum Co., all of Bartlesville, Okla.

Manufacture of resins from petroleum naphtha fractions having aniline point below about 17° F., consisting of destructive hydrogenation of a SO_2 extract of a petroleum distillate. No. 2,184,325. William J. Sweeney and Kenneth C. Laughlin, Baton Rouge, La., to Standard Oil Development Co., a corp. of Delaware.

Manufacture a transparent, rubbery sheet, comprising producing a polyvinyl acetal resin sheet containing an elasticizing amount of triamyl phosphate. No. 2,184,442. Henry B. Smith, Rochester, N. Y., to Eastman Kodak Co., Rochester, N. Y.

Manufacture transparent, rubbery sheeting, comprising producing a polyvinyl acetal resin sheet containing, as an elasticizing agent, a small amount of one of the following: triethylene glycol diacetate, triethyl citrate, and tetrahydrofurfuryl succinate. Nos. 2,184,443-445. Henry B. Smith, to Eastman Kodak Co., all of Rochester, N. Y.

Manufacture a synthetic leather resinous composition, comprising heating vegetable-tanned leather at 190-200° F. with phosphoric acid to form an emulsion, filtering, adding, at about 200° F., triethanolamine, and adding this batch to an aqueous mixture of phenol and hexamethylene tetramine at about 210° F. No. 2,184,467. Willett C. Pierson, East Orange, N. J., to National Products Corp., Washington, D. C.

Tung oil-phenol-formaldehyde resin, convertible by heat into an infusible, insoluble product. No. 2,185,080. Arthur Haroldson, Newark, Del., to Continental-Diamond Fibre Co., Newark, Del.

Manufacture water-soluble urea-formaldehyde ethylene glycol condensates. No. 2,185,167. Theodore S. Hodgins, Detroit, and Almon G. Hovey, Pleasant Ridge, Mich., to Reichhold Chemicals, Inc., Detroit, Mich.

Molding composition, comprising from 500 to 800 parts inert filler bound with a material containing pitch, glycerol-phthalate resin, and coumarone-indene resin, together with minor amounts of oil and solvent. No. 2,185,354. Silvio Pellerano, Brooklyn, N. Y., to Garfield Manufacturing Co., Garfield, N. J.

Production a laminated, resinous sheeting of the phenol-formaldehyde type, being sufficiently non-brittle to allow of its being punched or

U. S. Chemical Patents
Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 171

U. S. Chemical Patents

Off. Gaz.—Vol. 509, Nos. 3, 4—Vol. 510, Nos. 1, 2, 3—p. 172

stamped without fracturing. No. 2,185,477. Wesley R. Thompson and William E. Flood, Metuchen, N. J., to Catalin Corp. of America.

Manufacture nitrogenous condensation products of an alkylene imine containing at least 1 hydrogen atom attached to N, and a sulfuric acid ester of an alcohol having at least 6 carbon atoms. No. 2,185,480. Heinrich Ulrich and Karlhugo Kuespert, Ludwigshafen-on-the-Rhine, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany

Manufacture a fat-soluble condensation product, comprising reacting an animal or vegetable fatty acid with phosphorus pentoxide under controlled heating. No. 2,185,592. Stroud Jordan, Brooklyn, N. Y.

Process for hardening coagulated extrusion products composed of an undistillable coagulated diene polymer, comprising exposing the product in a substantially oxygen-free atmosphere containing vapors of a halogenated hydrocarbon. No. 2,185,656. Hein Israel Waterman and Willem Leendert Johannes de Nie, Delit, Netherlands, to Shell Development Co., San Francisco, Calif.

Preparation condensation products of the lower aliphatic aldehydes with compounds of the general formula: $RCO(NH.C^{x}H_{2})_{n}.OH$, where R represents any alkyl or hydroxy-substituted alkyl chain of a higher fatty acid, and x a number from 2 to 5, n representing a number from 1-4; also, the products obtained by sulfonating the above condensates. No. 2,185,817. Ernst Alfred Mauersberger, Maarssen, Netherlands, to Alframine Corp., New York City.

Production a linoxin substitute having properties in general simulating real linoxin but containing reaction products of a blown oil having some drying properties with about 0.2-2.0% of a strong acid; which substitute can be incorporated with fillers and pigments to produce a linoleum-like product resistant to washing with water and alkaline detergents. No. 2,185,967. Remmet Priester, Deventer, Netherlands, to Naamlooze Vennootschap Industrieele Maatschappij Voorheen Noury & Van Der Lande, Deventer, Netherlands.

Gas container, at least part of whose wall film consists essentially of plasticized gamma polyvinyl chloride. No. 2,186,183. Harlan L. Trumbull, Hudson, Ohio, to The B. F. Goodrich Co., New York City.

Manufacture copolymers of styrene with an unsaturated derivative of 1,4-dioxanediol-2,3. No. 2,186,359. Edgar C. Britton, Midland, Mich., and Harry Borden Marshall, Toronto, Ontario, and Walter J. LeFebre, Midland, Mich., to The Dow Chemical Co., Midland, Mich.

Manufacture products of the conjoint polymerization of styrene and a phosphoric acid ester. No. 2,186,360. Edgar C. Britton, Midland, Mich., Harry Borden Marshall, Toronto, Ontario, and Walter J. Le Febre, Midland, Mich., to The Dow Chemical Co., Midland, Mich.

Preparation an elastic, halogen-containing product, substantially insoluble in benzene, being a nuclear, halogenated benzene hydrocarbon containing not more than 2 substituents in the ring, with 1-5 equivalents of an ethylene halide—said product being formed in the presence of a Friedel-Crafts catalyst, said catalyst being retained in said product. No. 2,186,366. Gerald H. Coleman, Garnett V. Moore and George B. Stratton, Midland, Mich., to The Dow Chemical Co., Midland, Mich.

Spreadable adhesive, being a partially polymerized phenol resin in powdered form (40-80 mesh), said resin being polymerized to a state soluble in cold 10% aqueous caustic soda, but not beyond the point where it is soluble in hot 20% aqueous caustic soda. No. 2,186,369. Theodore Williams Dike, to I. F. Laucks, Inc., both of Seattle, Wash.

Production a resin, being the reaction product of gum accroides and hydroxypolymethylol benzene having at least 2 carbinol groups attached to the benzene nucleus. No. 2,186,406. Harry M. Dent, Eggertsville, and Alvin F. Shepard, Kenmore, N. Y., to General Plastics, Inc., North Tonawanda, N. Y.

Production a liquid resin composition hardening relatively rapidly only at temperature substantially above room temperatures, comprising an acidic phenol-formaldehyde resin thinned up with ethyl alcohol. No. 2,186,687. Wesley R. Thompson and William E. Flood, Metuchen, N. J., to Catalin Corporation of America, a corp. of Delaware.

Formaldehyde-urea molding composition comprising a formaldehyde urea reaction product, cellulosic material and o-benzoyl N,N-dibenzyl hydroxyl amine as a latent accelerator. No. 2,186,821. David E. Crodier, to Plaskon Co., Inc., both of Toledo, Ohio.

Process producing dimethylol urea acetal condensation product, a resin, dimethyl urea and acetal being main reactants. No. 2,187,081. T. Hodgins, Royal Oak, Mich. and A. Hovey, Pleasant Ridge, Mich., to Reichhold Chemicals, Inc., Detroit, Mich.

Process obtaining plastic material by treating rubber with hydrofluoric acid of more than 40%. No. 2,187,185. J. Söll, Leverkusen-I. G. Werk, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Resin composition comprises reaction product of an alkyl resin, phthalate ester of a monohydric alcohol and condensation product of an aromatic sulfonamide with an aldehyde. No. 2,187,199. H. Gardner, Chevy Chase, Md., and A. Kirkpatrick, St. Louis, Mo., to Monsanto Chem. Co., St. Louis, Mo.

Condensation products from hardened castor oil, boric acid and acetic anhydride. No. 2,187,334. K. Stickdorn, Rosslau, Anhalt, Germany, to Deutsche Hydrierwerke Aktiengesellschaft, Berlin-Charlottenburg, Germany.

Process improvement, laminating with urea formaldehyde resin by adding aqueous emulsion of polymerized methyl acrylate. No. 2,187,383. O. Ludwig to Rohm & Haas Co., both of Philadelphia, Pa.

Resin derived by heating at esterification temperature a member of group consisting of ketonic acids and their salts. No. 2,187,565. Herman A. Bruson & John W. Eastes, Phila., Pa., to The Resinous Products & Chem. Co., Phila., Pa.

Method plasticizing nitrogenous resins, comprising incorporation of condensation product of aliphatic nitropolyhydric alcohol, and resin-forming organic polycarboxylic acid. No. 2,187,566. Herman A. Bruson, Phila., Pa., to The Resinous Products & Chem. Co., Phila., Pa.

Resinous plastic compound consisting essentially of polystyrene and halogenated dephenyloxide as plasticizer. No. 2,187,695. Sylvia M. Stoesser, to The Dow Chemical Co., both of Midland, Mich.

Rubber

Process preserving rubber with the assistance of a diaryldiphenylene diamine of the para-quinonoid type or of an aryl, acidyldiphenylene diamine of that type. No. 2,183,567. Louis H. Howland, Nutley, N. J., to U. S. Rubber Co., N. Y. City.

Production a rubber factice, consisting in reacting an unsaturated oil with hydrogen polysulfide. No. 2,184,076. Edward Gottesmann, Jerusalem, Palestine, to Karl Werner Posnansky, New York City.

Preparation of 2-selenyl aryl thiazoles. No. 2,184,170. Lawrence R. Sperberg, Havana, Cuba, to Wingfoot Corp., Wilmington, Del.

Rubber vulcanization accelerator, comprising an ultra- or semi-ultra accelerator containing an activator, said activator being a metal complex salt with an amine. No. 2,184,238. Joy G. Lichty, Stow, Ohio, to Wingfoot Corp., Wilmington, Del.

Rubber accelerator, being the addition complex of zinc benzothiazyl mercaptide with a secondary or primary organic amine. No. 2,184,239. Joy G. Lichty, Stow, Ohio, to Wingfoot Corp., Wilmington, Del.

Rubber preservative, comprising a 4,4′-dialkoxy-N-alkyl-diarylamine. No. 2,184,512. William Baird and Maldwyn Jones, Blackley, England, to Imperial Chemical Industries, Limited, a corp. of Great Britain.

Production a plasticized synthetic rubber composition from haloformed rubber. No. 2,184,966. Peter J. Wiezevich, Elizabeth, N. J., now by judicial change of name to Peter J. Gaylor, to Standard Oil Development Co., a corp. of Delaware.

Production polymers of unsaturated hydrocarbons soluble in sulfuric acid and adapted for inclusion in large quantities in rubber mixtures and vulcanizable therewith. No. 2,185,951. Fritz Rostler and Vilma Mehner, Vienna, Austria, to Naftolen-Gesellschaft zur Verwertung der Rostler-Mehner 'schen Verfahren m. b. H., Vienna, Germany.

Preservation of latex by use of .01 to .1% of an alkyl mercury ester and a small amount of an alkali compound. No. 2,186,202. John McGavack, Leonia, N. J., to United States Rubber Co., New York City.

Method preserving rubber comprises treating with compound formed by reaction of N,N′ diaryl arylene diamine and sulfur chloride wherein N atom of secondary amine is joined to S atom. No. 2,187,155. J. Ingram, Nitro, W. Va., to Monsanto Chem. Co., St. Louis, Mo.

Textiles

Method imparting an improved softened finish to fabrics, paper, and leather, comprising treating same with aqueous sulfamate (of hydrogen or a salt-forming radical) and a long-chain alcohol sulfate ester salt of 8 or more carbon atoms. No. 2,183,721. Herbert A. Lubs and Luther B. Arnold, Jr., to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

Textile and leather processing agent, consisting of the neutralized sulfonate of the product obtained by condensing an amine with a condensate of an aldehyde having 2-18 carbon atoms and malonic acid. No. 2,183,929. Albert Frank Bowles, Jersey City, and Saul Kaplan, Teaneck, N. J., to The Richards Chemical Works, Inc., Jersey City, N. J.

Method conditioning yarn, comprising applying thereto a lubricating and softening composition containing an alkyl- or oxyalkyl-derivative of carbamic acid. No. 2,184,008. Joseph B. Dickey and James G. McNally, to Eastman Kodak Co., all of Rochester, N. Y.

Manufacture artificial textile fibres from waste regenerated cellulose. No. 2,184,586. Giuseppe Donagemma and Piero Donagemma, Milan, Italy, to "Snia-Viscosa" Societa Nazionale Industria Applicazioni Viscosi, Milan, Italy.

Process waterproofing lightweight garment fabrics by successively coating with paraffine and vinyl acetate resin. No. 2,184,600. Emil Knup and Franz Naef, Horn, Switzerland, to Textilwerk Horn A. G., Horn, Switzerland.

Method sheening the pile of wool rugs by treating with an aqueuos caustic alkali solution the pile, which is subsequently treated with an aqueous calcium hypochlorite solution. No. 2,185,210. James Douglas MacMahon, Niagara Falls, Lorenzo D. Taylor, Lewiston, and Varton Mardiras Kalusdian, New York City, to The Mathieson Alkali Works, Inc., New York City.

Method improving textile fabrics, comprising treating them in a bath with a water-soluble salt of a polyhydroxy-alkylated biguanide of an aliphatic base having at least 10 carbon atoms. No. 2,185,455. Frank J. Cahn and Morris B. Katzman, to The Emulsol Corporation, all of Chicago, Ill.

Method desizing cellulose fabrics sized with a predominantly carbohydrate compound, comprising subjecting the fabric to the action of aqueous sulfur dioxide. No. 2,185,548. Stanley I. Garnett, Providence, R. I., to American Cyanamid Co., New York City.

Process rendering loose cotton fiber substantially flash- or flame-proof, comprising immersing the fibrous material in aqueous sodium tetraborate solution to which has been added enough boric acid to bring the pH to 7.0 or 7.4. No. 2,185,695. Ralph R. Oliver, Lockport, N. Y., to Lockport Cotton Batting Co., Lockport, N. Y.

Method improving cellulosic textile fibers, comprising treating same with at least one organic compound containing an aliphatic chain, with halogen, oxygen, and nitrogen each bonded to a different carbon atom. No. 2,185,795. Leon Lilienfeld, Vienna, Austria; Paul Abel, Vienna, Austria (Germany), executor or in case of his inability to act, Emerich Hunna, Vienna, Austria (Germany), and Antonette Lilienfeld, Vienna, Austria (Germany).

Production highly twisted crepe thread of a rayon, comprising incorporating in said thread a resin, subjecting the thread to the action of a hot, aqueous fluid, and twisting while under the action of said hot fluid. No. 2,186,056. William Whitehead, Cumberland, Md., to Celanese Corp. of America, a corp. of Del.

Production cellulose derivative materials, comprising introducing non-acidic nitrogen into cellulosic materials by reacting the materials for at least 30 min. under super-atmospheric pressure with nitrogen-containing compounds, and catalyzing the reaction with a substance containing a metal atom capable of forming co-ordination compounds containing nitrogen. No. 2,186,101. Henry Dreyfus, London, Eng.

Textile softener and lubricant, being essentially the palmitate of N-*b*-hydroxyethyl morpholine. No. 2,186,628. Joseph B. Dickey, to Eastman Kodak Co., both of Rochester, N. Y.

Process improving water repellency of textile materials comprises treatment with chlor-carbonic ester of alcohol containing at least four carbon atoms then drying at sufficient temperature to cause reaction between said ester and textile. No. 2,186,889. Heinrich Ulrich and Paul Koerding, Ludwigshafen-on-the-Rhine, Germany, to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany.

Production artificial silk fabrics comprises treating fabrics containing yarns of cellulose esters which have an acyl content of about 1.8 to 2.1 groups per $C_6H_{10}O_5$ unit with aqueous organic solutions having solvent or swelling action on organic esters. No. 2,187,358. A. Mellor, Spondon, England, to Celanese Corp. of Amer.

Process finishing dyed textile material containing fibers of cellulose derivative comprises incorporating calcium hydroxide. No. 2,187,365. G. Schneider, Montclair, N. J. and W. Whitehead, Cumberland, Md., to Celanese Corp. of Amer.

Foreign Chemical Patents
Belgian, Canadian, French & English—p. 3

Abstracts of Foreign Patents

To assist those making use of this summary, it might be well to comment briefly on the system used by each of these countries in reporting patents.

Canada grants the patent on the date of publication. It does not print the patents, but supplies typewritten certified copies at a cost averaging about five dollars each.

English "patents" here reported are known as *Complete Specifications Accepted* and are open to opposition by interested parties for a period of two months from date of publication. Printed copies may be obtained at ls. ld. each.

French patents are granted several months before publication, and the printed report issued several days or even weeks after its date. Printed copies may be obtained at 10 francs each.

Belgian patents, like French, are granted long before publication. The report comes out 12 times each year, and photostatic copies can be obtained at from 3.50 to 4.50 francs per page.

In this digest the latest available data will be published, but it will be understood that some delay will occur as a result of present conditions in Europe. The German patents will be reported just as soon as we are sure of uninterrupted service.

We shall be glad to receive comments or criticisms.

BELGIAN PATENTS GRANTED APRIL 28, 1939; PUBLISHED OCTOBER 9, 1939. (Classes F et seq.)

Dyeing of mixed wool and regenerated cellulose fibres with arylamides of 6-sulfo-2-hydroxynaphthalene-3-carboxylic acid. No. 433,089. I. G. Farbenindustrie A.G.

Treatment of vegetable textile fibres with esterifying agents such as anhydrides, chlorides, isocyanates and agents equivalent to the isocyclic or heterocyclic series to produce esterification of not more than 10% by weight of the fibre. No. 433,127 (see also No. 433,357). I. G. Farbenindustrie A.G.

Solid dyes and process of manufacture. No. 433,200. I. G. Farbenindustrie A.G.

Production of casein fibres. No. 433,308. I. G. Farbenindustrie A.G.

Desulfurizing of "green" rayon filaments. No. 433,428. Algemeene Kunstzijde Unie N.V.

Printing ink pigment comprising a white base mixed with a decolorable black color and a soluble black lacquer, the black color being derivatives of dinitrophenolor chloro-dinitrobenzene. No. 433,361. A. Caldera.

Toxic gas detector. No. 432,801. R. de Jonghe.

Combustible mixtures for hand grenades comprising powdered aluminum and iron dioxide and barium dioxide. No. 433,184.

Cement manufactured from calcium sulfate and blast furnace slag. No. 432,852. Imperial Chemical Industries, Ltd.

Breaking of emulsions, colloidal dispersions, etc. by addition of starch to the solution and then acidifying. No. 433,186. N.V. Scholten's Chemische Fabrieken.

Stabilization of sensitive photographic emulsions. No. 433,482. Kodak Pathé S.A. Française.

Mixture of essential oils blended with menthol, methylene blue, acriflavine, adrenaline chloride and citric acid, for use as eye wash. No. 433,004. G. W. Taylor.

BELGIAN PATENTS GRANTED MAY 31, 1939; PUBLISHED NOVEMBER 21, 1939. (Classes A to E incl.)

Silica gel with heat of adsorption for water of 14 to 28 cal/g used for purifying tobacco smoke. No. 433,802. K. Skumburdis.

Industrial preparation of *B. Delbrücki* and lactic in presence of sugars. No. 433,048. G. Boringhieri.

Operation of blast furnaces. No. 433,183. H. A. Brassert & Co.

Elimination of fluorine from gases by transforming the acid into silicon tetrafluoride and then dissociation by hydrolysis. No. 433,654. Metallgesellschaft A.G.

Separation of nickel and copper from nickel-copper matte. No. 433,681. I. G. Farbenindustrie A.G.

Obtainment of metallic magnesium from magnesium oxides by reduction in the presence of carbon. No. 433,751. American Magnesium Metals Corp.

Separation by fusion of metallic zinc contained in dusts. No. 433,979. Huttenwerke Siegerland A.G.

Deoxidation and degasification of steel. No. 434,012. Rochling'sche Eisen-und Stahlwerke G.m.b.H.

Production and uses of opaque vitreous enamels. Nos. 433,670; 433,671; 433,672. Vereinigte Chemische Fabriken Kreidl Heller & Co.

Fabrication of glass building blocks provided with assembling hooks. No. 433,763. S.A. des Manufactures des Glaces et Produits Chimiques de Saint-Gobain, Chauny et Cirey.

Manufacture of glass fibres. Nos. 433,832 and 433,833. Algemeene Kunstvezel Mij.N.V.

Ceramic product resistant to thermal shock. No. 433,879. Robert Bosch G.m.b.H.

Opacifier for vitreous enamels made by calcining a mixture of magnesium and cerium oxides. No. 433,857 (see also No. 434,040). Société de Produits Chimiques des Terres.

Bacterial decomposition of hydrogen complexes such as proteins. No. 433,273. M. Percheron.

Anti-corrosion paints containing rubber and catalysers capable of polymerizing rubber in the presence of higher alcohols and high molecular weight fatty acids. No. 433,624. L. N. J. H. Elias.

Separation of CO from hydrogen. No. 433,635. American Magnesium Metals Corp.

Purification of gas containing ethylene. No. 433,640. De Directie van de Staatsmijnen in Limburg.

Preparation of hydrocarbons from CO and H in the presence of catalyst. No. 433,718. I. G. Farbenindustrie A.G.

Artificial resinous composition similar to rubber. No. 433,793. S.E.M. Société d'Electricite et de Mecanique, Procedes Thomson-Houston, Vanden Kerchove & Carels S.A.

Production of sulfonated oils and their use in treating fibrous matters. No. 433,806. National Oil Products Company.

Manufacture of powdered alkaline silicates. No. 433,808. S.A. La Floridienne J. Buttgenbach & Co.

Removal of sulfur from gas containing CO and H. No. 433,848. Steinkohlen-Bergwerke "Rheinpreussen."

Dyes made by reacting an amine diazo compound of known formula with either alpha-naphthol or beta-naphthol. No. 433,854. I. G. Farbenindustrie A.G.

Preparation of highly dispersible pigment valuable for corrosion resistant paints. No. 433,891. I. G. Farbenindustrie A.G.

Preparation of carbonates of the cyclopentano-polyhydrophenanthrene series. No. 433,903. Schering A.G.

Polymerized products. No. 433,912. E. I. du Pont de Nemours & Co., Inc.

Preparation of colored bitumen dispersions. No. 433,914. N.V. de Bataafsche Petroleum Mij.

Preparation of vitamin K. No. 433,936. Produits Roche S.A.

Manufacture of water-proof cellulose films. No. 433,945. Sylvania Industrial Corporation.

Aldehyde condensation resins. No. 433,949. S.E.M.Ste. d'Electricite et de Mecanique, Procedes Thomson-Houston, Vanden Kerchove & Carels.

Preparation of dicarboxylic acid. No. 433,954. E. I. du Pont de Nemours & Co.

Removal of organic sulfur compounds from gas mixtures with activated carbon. No. 433,955. Carbo-Norit-Union Verwaltungsgesellschaft m.b.H.

Preparation of 4-amino-benzene-sulfonamide phosphodichloride. No. 433,973. Produits Roche S.A.

Preparation of easily soluble calcium salts producing stable solutions. No. 434,023. Johann A. Wulfing Chemische Fabrik.

Preparation of colors. No. 434,037. Manchester Oxide Company, Ltd.

Preparation of beta-alcoxyaldehydes by reacting non-saturated aldehydes with alcohols in the presence of an acid substance and water. No. 434-051. Deutsche Gold-und Silber-Scheidenstalt.

Preparation of non-saturated acids from their esters. No. 434,053. Deutsche Gold-und Silber-Scheidenstalt.

Use of pigments as admixtures for insecticides for protection against light. No. 434,088. Société des Usines Chimiques Rhône-Poulenc.

Manufacture of hydrocarbons from CO and H by catalysis. No. 434,-097. N.V. Internationale Koolwaterstoffen Synthese Mij.

CANADIAN PATENTS GRANTED DECEMBER 19, 1939

Alloy steel containing C, Mn, Cu, Ni, Si, S and Fe but substantially free from Bo, Cr, Mo, Ta, W, U and Va. No. 385,709 (see also No. 385,710). Gustaf Adolph Reinhardt, Youngstown, Ohio.

Wear resisting alloys. No. 385,722. Fay H. Willey, Detroit, Mich.

Amorphous precipitated silica of non-coalescent particles of substantially 0.5-5 microns diameter, white, opaque and non-gelatinous. No. 385,723. American Cyanamid Company, New York, N. Y.

Liquid fumigant effective below 70° F. composed of 25-50% by volume of ethylene oxide and not less than equal volume of ethylene dichloride. No. 385,741. Carbide and Carbon Chemicals, Ltd., Toronto, Ont.

Process and apparatus for manufacturing carbon black. Nos. 385,743 and 385,744. Columbian Carbon Company, New York, N. Y.

Polymeric vinylidene chloride. No. 385,753. The Dow Chemical Company, Midland, Mich.

Vinylidene chloride plastic derivative. No. 385,754. The Dow Chemical Company, Midland, Mich.

Treatment of porous earth formations by injecting latex and then coagulating it. No. 385,755. The Dow Chemical Company, Midland, Mich.

Manufacture of mixed Pb and PbO compositions. No. 385,766. National Lead Company, New York, N. Y.

Refrigerant mixture comprising hydrogenated naphthalene as solvent

Foreign Chemical Patents

Belgian, Canadian, French & English—p. 4

and a volatile chemically stable refrigerant soluble therein. No. 385,768. The Philadelphia and Reading Coal and Iron Company, Philadelphia, Penna.

Purification of aliphatic hydrocarbon polymers in manufacture thereof. No. 385,774. Shell Development Company, San Francisco, Calif.

CANADIAN PATENTS GRANTED DECEMBER 26, 1939

Manufacture of asbestos cement sheets. No. 385,823. Archibald Gillham McLean, Enfield, N.S.W., Australia.

Fumigant composition and warning agent for poisonous gases. No. 385,868. Canadian Industries, Ltd., Montreal, P.Q.

Dialkyl formamide solvent. No. 385,498. E. I. du Pont de Nemours & Co., Wilmington, Del.

Quaternary salt of the formula: $R\text{-}CO\text{-}NH\text{-}CH_2\text{-}\overset{X}{\underset{|}{N}}(tert)$, where R is an aliphatic hydrocarbon radical, N(tert) a molecule of a base selected from pyridine, C-alkyl-pyridines and quinoline, and X is the anion of a salt forming acid. No. 385,907. Imperial Chemical Industries, Ltd., London, Eng.

Improved production of alkali metal and alkaline earth metals including Mg by reduction of chlorine dioxide. No. 385,921. The Mathieson Alkali Works, New York, N. Y.

Cyclic water treating process comprising flowing water through pervious bed of insoluble granular resin. No. 385,929. The Permutit Co., New York, N. Y.

Catalytic polymerization of olefines. No. 385,932. Shell Development Company, San Francisco, Calif.

Removal of mercaptans from hydrocarbon liquids. No. 385,933. Shell Development Company, San Francisco, Calif.

Disintegration of silicate ores containing amphoteric metal oxides by calcining with Ba compound to form dibarium silica. No. 385,935. Société de Recherches et d'Applications Chimiques (Sorac), Brussels, Belgium.

Manufacture of phenol-ketone condensation product and resin. No. 385,955. Henry Dryfus, London, Eng.

CANADIAN PATENTS GRANTED JANUARY 2, 1940

Aluminum bronze powder. No. 386,009. Aluminum Co. of America, Pittsburgh, Pa.

Iodine recovery from brine using an air-Cl mixture. No. 386,040. The Dow Chemical Company, Midland, Mich.

Regenerative contact mass for hydrocarbon conversion comprising molded silica and alumina blends. No. 386,051 (see also No. 386,052). Houdry Process Corporation, Dover, Del.

Glue from residue insoluble in water at 95° F. resulting from hot-water treatment of collagen-containing protein matter. No. 386,057. M and M Wood Working Company, Portland, Ore.

CANADIAN PATENTS GRANTED JANUARY 9, 1940

n-Propyl methacrylate having a boiling point of approximately 71-75° C. at 88 mm pressure. No. 386,158. Canadian Industries, Ltd., Montreal, P.Q.

Copper coating of ferrous articles by immersion. No. 386,159. Canadian Industries, Ltd., Montreal, P.Q.

Preparation of a hydroxylamine of a cyclic compound by reduction of a nitro-cyclic compound in the presence of a non-acidic aqueous solution substantially saturated with the desired cyclic hydroxylamine. No. 386,166. Dominion Rubber Co., Ltd., Montreal, P.Q.

Synthetic rubber made by hydrogenating furfurol to methylfurane and then to tetrahydromethylfurane, dehydrating to piperylene, and then polymerizing to synthetic rubber. No. 386,177. Les Usines de Melle, Melle, France.

Preparation of 9.11-octadecadiene 1-acid by heating recinoleic acid at above 270° C. No. 386,179. N.V.Industrieele Mij. voorheem Noury & Van der Lande, Deventer, Netherlands.

Preparation of lubricant by chemically combining fatty oil with S and P. No. 386,187. The Pure Oil Company, Chicago, Ill.

Sealing-off of porous earth formations by introducing an organic compound of silicon forming an insoluble precipitate by reaction with water. No. 386,195. Shell Development Corporation, San Francisco, Calif.

Treatment of synthetic lubricating oils. No. 386,196. Shell Development Corporation, San Francisco, Calif.

Insecticide and fungicide comprising an ammonium polysulfide solution containing over 35% total sulfur. No. 386,197. Shell Development Corporation, San Francisco, Calif.

Removal of hydrocarbon acid component with ethylene glycol. No. 386,198. Shell Development Corporation, San Francisco, Calif.

Fractionation of hydrocarbon oil. No. 386,199. Shell Development Corporation, San Francisco, Calif.

Sealing of porous earth formations by introducing a solution of asphalt bitumen, said solution precipitating asphalt as an insolute in contact with water. No. 386,200. Shell Development Corporation, San Francisco, Calif.

Interpolymerization of olefine. No. 386,201. Shell Development Corporation, San Francisco, Calif.

Textile weighing composition consisting of an amylaceous substance, urea and water. No. 386,205. Stein, Hall & Co., Inc., New York, N Y.

Laminated thermoplastic insulation material. No. 386,224. Woodall Industries, Inc., Detroit, Mich.

Production of alloy containing at least 5% Cu and 10% Cr and the balance substantially Fe by mechanically working the metal at between 1000 and 650° C. No. 386,226. W. P. Digby and E. T. Digby, London, England.

Ceramic article made by forming and burning a latex-ceramic mix. No. 386,227. Gustav Heinz and E. B. Carter, Morrisville, Penna.

Ointment containing triethanol amine stearate, and excess of stearic acid, and allantoin particles colloidally dispersed therein. No. 386,238. National Drug Company, Philadelphia, Penna.

Rubber having incorporated as vulcanization accelerator benzyltrimethylammonium benzthiozylsulfide. No. 386,242. Canadian Industries, Ltd., Montreal, P.Q.

CANADIAN PATENTS GRANTED JANUARY 16, 1940

Resinous composition comprising the chemical combination of soya bean oil, glycerol, linseed oil acids, shellac and phthalic anhydride. No. 386,307. Canadian General Electric Company, Ltd., Toronto, Ont.

Solutions of unvulcanized rubber the viscosity of which have been reduced by the action of a fraction of a per cent. of unneutralized alpha-nitrose-beta-naphthol based on the rubber. No. 386,313. Canadian Industries, Ltd., Montreal, P.Q.

Manufacture of sulfuric acid by burning sulfur to sulfur dioxide with air predried by solid agent capable of repeated regeneration with air heated by exchange with hot gases from burning sulfur. No. 386,314. Canadian Industries, Ltd., Montreal, P.Q.

Triethylene glycol diethyl ether, being a liquid boiling around 240° C. at atmospheric pressure and having sp.gr. of 0.950 at 20°/20° C. No. 386,324. Carbide & Carbon Chemicals, Limited, Toronto, Ont.

Manufacture of diaryl arylene diamine by heating an aminophenol with a primary arylamine in the presence of a catalyst, splitting off water of condensation at completion of the deammoniation, and distilling to free product from unreacted primary arylamine and intermediate reaction products. No. 386,334. Dominion Rubber Company, Ltd., Montreal, P.Q.

Lubricating mineral oil containing at least 0.05% diethylene oxide. No. 386,360. The Pennzoil Company, Los Angeles, Calif.

Process for the manufacture of 4-alkyl-5-drydroxyalkylthiazole. No. 386,375. Winthrop Chemical Company, Inc., New York, N. Y.

Purification of para-aminobenzene-sulfonamide by precipitation from aqueous solution. No. 386,376. Winthrop Chemical Company, Inc., New York, N. Y.

Production of amino-substituted arsenobenzene-formaldehyde bisulfide compound. No. 386,377. Winthrop Chemical Company, Inc., New York, N. Y.

Manufacture of water-soluble organic iodine compound. No. 386,378. Winthrop Chemical Company, Inc., New York, N. Y.

Manufacture of arsonic acid. No. 386,379. Winthrop Chemical Company, Inc., New York, N. Y.

Manufacture of arsenobenzene-monosulfoxylate. No. 386,403. Winthrop Chemical Company, Inc., New York, N. Y.

ENGLISH COMPLETE SPECIFICATIONS ACCEPTED. PUBLISHED DECEMBER 6, 1939 AND SUBJECT TO OPPOSITION FOR TWO MONTHS FROM THAT DATE

Production of mixtures of hydrocarbons containing a high proportion of olefines from CO and H. No. 515,038. London Testing Laboratory, Ltd.

Synthetic production of motor fuels. No. 515,039. Anglo-Iranian Oil Co., Ltd.

Production of resinous condensation products. No. 514,989. Imperial Chemical Industries, Ltd.

Production of cast-iron alloy. No. 514,941. W. J. Sparling.

Effervescent composition containing $Mg(OH)_2$. No. 514,888. A. W. Pauley.

Manufacture of beryllium oxide. No. 514,992. Seri Holding S.A.

Production of metallic screens by electrodeposition. No. 515,043. E. O. Norris, Inc.

Manufacture of SO_2 and CaO. No. 514,993. A. N. Mann.

Expanded rubber. No. 514,944. Expanded Rubber Co., Ltd.

Prevention of ignition of volatile liquids. No. 514,999. F. P. G. Roberts.

Treatment of lac or shellac. No. 515,000. A. F. Suter, A. Janser & W. E. Suter.

Low-C iron and steel. No. 514,950. S. Westberg.

Grey cast iron manufacture. No. 514,951. F. C. T. Daniels.

Cr-containing ferrous alloys. No. 514,894. F. C. T. Daniels.

Cast iron manufacture. No. 514,952. Carborundum Co., Ltd.

Photographic dyestuff pictures. No. 514,955. B. Gaspar.

Surface hardening of steel articles. No. 515,004. Bochumer Verein für Gussstahlfabrikation A.G.

Manufacture and applications of synthetic rubber. No. 514,912. Imperial Chemical Industries, Ltd.

Gas masks. No. 514,921. V. Horak.

Manufacture of multi-ply glazed papers. No. 515,012. Grove Mill Paper Co., Ltd.

Manufacture of mercapto-arylene-thiazole. No. 515,015. United States Rubber Products, Inc.

Tempering of glass sheets. No. 514,975. L. J-B. Forbes & J. Heaton.

Preparation of aqueous emulsions. No. 515,021. P. P. Hiltner.

Fine grain photographic images. No. 515,022. J. R. Weber.

Low-C iron production. No. 514,978. Sachtleben A.G. für Bergbau und Chemische Industrie.

Dehydration by azeotropic distillation. No. 515,025. Usines de Melle.

Manufacture of azo-dyestuffs. No. 515,098. Society of Chemical Industry in Basle.

Manufacture of dyestuffs. Nos. 515,099 and 515,066. Society of Chemical Industry in Basle.

Removal of naphthenic acids from mineral oils. No. 515,069. N.V. de Bataafsche Petroleum Mij.

Phenol-aldehyde condensation products. No. 515,112. I. G. Farbenindustrie A.G.

Deodorant powder. No. 514,979. C. E. Jamieson & Co.

Production of mono-vinyl acetylene. No. 514,929. Consortium für Elektrochemische Industrie Gesellschaft.

ENGLISH COMPLETE SPECIFICATIONS ACCEPTED. PUBLISHED DECEMBER 13, 1939 AND SUBJECT TO OPPOSITION FOR TWO MONTHS FROM THAT DATE

Manufacture of composite laminated materials. No. 515,346. Minster Linen Process Co., Ltd.

Production of heteropolymeric reaction products. No. 515,196. Phillips Petroleum Co.

Emulsion for coating, impregnation, and sealing purposes. No. 515,198. Deutsche Erdol A.G.

Moulding of sheets from plastic masses. No. 515,299. Imperial Chemical Industries, Ltd.

Dyes and photographic emulsions containing them. No. 515,145. Kodak, Ltd.

Bituminous composition. No. 515,146. F. W. Valle-Jones.

Refining of pig iron. No. 515,253. F. P. Mehta.

Manufacture of steel. No. 515,254. F. P. Mehta.

Dephosphorizing steel. No. 515,255. F. P. Mehta.

Production of dispersions. No. 515,217. G. D. Clapperton & F. G. L. Becker.

Metallizing of objects in vacuo by metal vaporizing or cathode sputtering. No. 515,148. Bosch Gesellschaft.

Production of dry starch products by swelling in cold water. No. 515,351. A. A. Salzburg.

Foreign Chemical Patents

Belgian, Canadian, French & English—p. 5

Treatment of zinc dust catalyst to reduce speed of reaction. No. 515,156. Siemens & Halske A.G.

Treatment of ore bearing materials. No. 515,157. Anglo-Oriental (Malaya), Ltd.

Optically active menthones and mentols. No. 515,171. Howard & Sons, Ltd.

Driers for varnishes, lacquers, paints, and plastic masses. No. 515,172. I. G. Farbenindustrie A.G.

Catalyst for cracking petroleum oils. No. 515,309. Standard Oil Development Company.

Manufacture of composite paper and linoleum substitute. No. 515,222. Davidson & Sons Co., Ltd.

Coating composition. No. 515,181. International Cottaphane, Ltd.

Anthraquinone compounds. No. 515,185. Imperial Chemical Industries, Ltd.

Electrodeposition of zinc. No. 515,186. E. I. du Pont de Nemours & Co.

Manufacture of tubing from thermoplastic material. No. 515,187. E. I. du Pont de Nemours & Co.

Manufacture of resins. No. 515,263. Standard Oil Development Company.

Aromatic dinitriles. No. 515,192. E. I. du Pont de Nemours & Co.

Alkylation of hydrocarbons. No. 515,367. Texaco Development Corp.

Sensitizing silver halide emulsions. No. 515,372. Kodak, Ltd.

Manufacture of cork compositions. No. 515,323. Crown Cork & Seal Co., Inc.

Manufacture of ammonium sulfate. No. 515,374. Imperial Chemical Industries, Ltd.

Manufacture of 2:3 oxynaphthalene carboxylic acid and dyestuffs. No. 515,381. Society of Chemical Industry in Basle.

Preparation of germicides. No. 515,386. Parke, Davis & Co.

Manufacture of laminated resin-impregnated mouldings. No. 515,386. H. W. Hutton & G. R. Eyssen.

Distillation of solid carbonaceous materials. No. 515,389. British Coal Distillation, Ltd.

Fractional separation of hydrocarbon vapors. No. 515,390. Houdry Process Corp.

Gutta-percha or balata compositions. No. 515,334. Dunlop Rubber Co.

Pressure extraction of solid carbonaceous materials. No. 515,335. N.V. Internationale Hydrogeneeringsoctrooien Mij.

Production of calcium sulfate. No. 515,293. E. I. du Pont de Nemours & Co.

Cyanamide treatment of precious metal ores. No. 515,344. A. Afrom.

ENGLISH COMPLETE SPECIFICATIONS ACCEPTED. PUBLISHED DECEMBER 20, 1939 AND SUBJECT TO OPPOSITION FOR TWO MONTHS FROM THAT DATE

Photographically light-sensitive layers. Nos. 515,420 and 515,421. E. R. Elvegard.

Production of cast synthetic resins. No. 515,467. K. Loos.

Extraction and refining of glycerides and products resulting therefrom. No. 515,468. Pittsburgh Plate Glass Company.

Production of synthetic resins, moulding compositions and powders, and moulded articles. No. 515,616. F. Pollak.

Thermoplastic resins. No. 515,565. Imperial Chemical Industries, Ltd.

Dental alloy. No. 515,516. Baker & Company, Inc.

Preparation of hormones, physiologically-active sterols, and derivatives thereof. No. 515,566. B. P. H. Wiesner and R. Milton.

Preparation of mixed resins for cation exchange. No. 515,517. I. G. Farbenindustrie A. G.

Manufacture of quaternary ammonium compounds. No. 515,477. Deutsche Hydrierwerke A. G.

Manufacture of ammonium sulfate. No. 515,482. Imperial Chemical Industries, Ltd.

Treatment of waste acids containing nitric acid. No. 515,429. H. Pauling.

Production of chocolate compounds for use in the coating of foodstuffs. No. 515,430. International Patents Development Company.

Treatment of hydrocarbon oil. No 515,531. Texaco Development Corporation.

Sensitive material for colour photography. No. 515,536. J. E. Odle, L. Moen and A. G. Tull.

Method of preventing curling of laminated films, foils, or sheets of which the components shrink ununiformly, such as cellulose hydrate on paper. No. 515,449. I. G. Farbenindustrie A. G.

Manufacture of coated and shaped bodies from viscose sponge. No. 515,450. I. G. Farbenindustrie A. G.

Treatment of base materials such as felted or woven fibrous materials to render them water-repellent No. 515,454. Imperial Chemical Industries, Ltd.

Production of decorative finishes on metal. No. 515,455. Imperial Chemical Industries, Ltd.

Apparatus for decontaminating air. No. 515,490. J. Jeffreys & Co., Ltd.

Means for allaying corrosion or decay of fibrous, stonework or other surfaces. No. 515,540. W. V. Gilbert.

Production of developed silver pictures from silver halide emulsions in blue-black tones. No. 515,493. I. G. Farbenindustrie A. G.

Production of ethylene oxide. No. 515,570. U. S. Industrial Alcohol Co.

Artificial filaments derived from nitro-cellulose. No. 515,573. R. Wallach.

Production of alkamine esters. No. 515,501. Chemische Fabriken Dr. J. Wiernik & Co.

Dyeing, bleaching, and other treatment of fibrous materials in package form. No. 515,548. Franklin Rayon Corporation.

Production of dispersions. No. 515,582. Imperial Chemical Industries, Ltd.

Preparation of stable disinfectants. No. 515,504. G. Schoenberg.

Manufacture of ketones or their enol derivatives. No. 515,591. Society of Chemical Industry in Basle.

Breaking of emulsions. No. 515,631. I. G. Farbenindustrie A.G.

Moulding or forming of refractory brick. No. 515,632 Metallfrax A.G.

Production of ceramic dielectrics. No. 515,633. Steatite & Porcelain Products, Ltd.

Separation of minerals. Nos. 515,592 and 515,601. F. L. Smidth & Co. Aktieselskab.

Manufacture of phthalocyanine sulfonic acid chlorides. No. 515,637. I. G. Farbenindustrie A.G

Method of producing coatings on magnesium or its alloys. No. 515,648. Magnesium Elektron, Ltd.

Treatment of mineral materials by froth flotation. Nos. 515,606 and 515,607. F. L. Smidth Aktieselskab.

Preparation of cement raw materials. Nos. 515,608 and 515,609. F. L. Smidth Aktieselskab.

ENGLISH COMPLETE SPECIFICATIONS ACCEPTED. PUBLISHED DECEMBER 29, 1939 AND SUBJECT TO OPPOSITION FOR TWO MONTHS FROM THAT DATE

Recovery of glycerol from still residues from fermentation processes. No. 515,831. Imperial Chemical Industries, Ltd.

Preparation of sensitive colloid films. No. 515,732. O. Czeija and F. Lierg.

Production of aerated or gasified spray or foam. No. 515,832. F. W. Willis and A. Simpson.

Fire-proofing of combustible organic materials. No. 515,735. E. I. du Pont de Nemours & Company.

Manufacture of 1-cyanobutadiene-1:3. No. 515,737. Imperial Chemical Industries, Ltd.

Manufacture of detergents. No. 515,739. H. T. P. Gee.

Production of glass fibres. No. 515,741. N.V.Mij.tot Beheer en Exploitatie van Octrooien.

Sensitized photographic emulsions. No. 515,789. Kodak, Ltd.

Disposal of dust produced in the performance of scouring, abrading, or other dust-creating operations. No. 515,792. British United Shoe Machinery Company, Ltd.

Photographic development of silver halide layers. No. 515,838. I. G. Farbenindustrie A.G.

Methods of protecting metallic electric conductors from chemical attack at high operating temperatures. No. 515,718. British Thomson-Houston Co., Ltd.

Mixing of gases and liquids in the oxidation of high molecular hydrocarbons into fatty acids, alcohols, etc. No. 515,720. Vereiningte Oelfabriken Hubbe & Farenholtz.

Manufacture of α-chloro-β-alkoxybutyraldehydes. No. 515,758. I. G. Farbenindustries A.G.

Manufacture of paper. No. 515,760. W. H. Millspaugh.

Dispersions of rubber. No. 515,763. Dewey & Almy, Ltd.

Coated sheet materials. No. 515,803. Imperial Chemical Industries, Ltd.

Treatment of textile materials. No. 515,847. Courtaulds, Ltd.

Manufacture of synthetic resins. No. 515,894. Société des Usines Chimiques Rhône-Poulenc.

Etherification of cellulosic fibres. No. 515,855. F. H. Reichel.

Finishing of surfaces. No. 515,896. Imperial Chemical Industries, Ltd.

Manufacture of diarylmethane derivatives. No. 515,907. Deutsche Hydrierwerke A.G.

Treatment of fibrous textile materials. No. 515,908. Deutsche Hydrierwerke A.G.

Manufacture of zirconium compounds. No. 515,725. Allen (Stockton), Ltd.

Separation of constituents of coal distillation gases, etc. No. 515,776. British Oxygen Co., Ltd.

Manufacture of pyrroles. No. 515,865. I. G. Farbenindustrie A.G.

Preparation of polarizing layers. No. 515,917. G. A. Krause.

Improvement in stabilizing oils. No. 515,918. Deutsche Erdol A.G.

Production of hydrocarbon products by destructive hydrogenation of solid carbonaceous materials. No. 515,928. N.V. Internationale Hydrogeneeringsoctrooien Mij.

ENGLISH COMPLETE SPECIFICATIONS ACCEPTED. PUBLISHED JANUARY 3, 1940 AND SUBJECT TO OPPOSITION FOR TWO MONTHS FROM THAT DATE

Ferrous alloys containing manganese. No. 516,054. Boroloy Metallurgical Co.

Manufacture of lead chromate and mixture of lead chromate and sulfate. No. 515,995. Priestman Collieries, Ltd.

Combustible gas manufacture. No. 515,996. L. B. Jones.

Manufacture of dyestuffs. No. 515,998. B. Gaspar.

Manufacture of compounds of the cyclopentanopolydrophenanthrene series. No. 516,056. Society of Chemical Industry in Basle.

Concentration of minerals by froth flotation. No. 515,937. Minerals Separation, Ltd.

Production of zein solutions. No. 515,999. International Patents Development Co.

Manufacture of agglomerated fuels. No. 515,939. J. Beaudequin and J. A. Wormser.

Laminated materials. No. 515,942. Distillers Co., Ltd.

Preparation of lactones. No. 516,000. H. Hunsdiecker, H. Erlbach and E. Vogt.

Production of ascorbic acid. No. 516,115. Chas. Pfizer & Co.

Production of polyvinyl synthetic resins. No. 516,118. Kodak, Ltd.

Reducing chromous and chromic chlorides. No. 515,953. Great Western Electrochemical Co.

Production of starch. No. 516,060. International Patents Development Co.

Stabilizing of photographic emulsions. No. 516,005. J. D. Kendall.

Electrolytic production of zinc. No. 515,962. I. G. Farbenindustrie A.G.

Manufacture of higher fatty acid chloride. No. 515,963. I. G. Farbenindustrie A.G.

Purification of mineral oil products. No. 516,019. Trinidad Leaseholds, Ltd.

Treatment of materials containing tantalum and/or niobium. No. 516,068. Société Générale Metallurgique de Hoboken.

Production of fast tints on cellulosic fibres. No. 516,076. Society of Chemical Industry in Basle.

Continuous distillation and rectification of liquids. No. 516,125. Société Générale de Fours a Coke Systémes Lecocq.

Manufacture of drying oils. No. 516,024. N.V. Industrieele Mij. voorheem Noury & Van der Lande.

Manufacture of derivatives of chrysene. No. 516,130. Society of Chemical Industry in Basle.

Manufacture of nitrogenous condensation products. No. 516,131. Society of Chemical Industry in Basle.

Manufacture of water-proof paper. No. 516,132. I. G. Farbenindustrie A.G.

Production of cellulose derivatives or cellulose conversion product composition. No. 516,144 (see also No. 516,145). Imperial Chemical Industries, Ltd.

Foreign Chemical Patents

Belgian, Canadian, French & English—p. 6

Production of stabilized diazo compounds.* No. 515,980. Calco Chemical Co.

Coloring-material and composition for this purpose. No. 515,981. Calco Chemical Co.

Precipitation of Cu by means of Ni. No. 515,983. I. G. Farbenindustrie A.G.

Resinous compositions and articles therefrom. No. 515,985. British Thomson-Houston Co., Ltd.

Manufacture of carboxylic acids of the cyclopentanopolydrophenanthrene series. No. 516,030. Schering A.G.

Manufacture of quaternary amino ketones. No. 516,090. Geigy A.G.

Method of concentrating, purifying, and separating the disperse phase in colloid dispersions. No. 516,092. Semperit Osterrichisch-Amerikanische Gummiwerke A.G.

Precipitation of suspended particles from gases. No. 516,158. Lodge-Cottrell, Ltd.

Production of hydrocarbons from CO and H. No. 516,160. I. G. Farbenindustrie A.G.

Manufacture of alkyl phenols. No. 516,164. Dow Chemical Company.

FRENCH PATENTS GRANTED SEPTEMBER 4, 1939; PUBLISHED SEPTEMBER 21, 1939

Treatment of cereals etc. for disinfection. No. 850,127. I. G. Farbenindustrie A.G.

Preparation of filaments and other colored articles from cellulose esters. No. 50,144/806,012*. Société "Rhodiaceta."

Manufacture of solid dyes. No. 50,139/838,947*. I. G. Farbenindustrie A.G.

Manufacture of cellulose from wastes. No. 850,119. B. Dorner.

Gold alloys. No. 850,133. Deutsche Gold-und Silber-Scheideanstalt vormals Roessler.

Improvement in extraction of iron from ores. No. 850,240. F. L. Duffield.

Manufacture of cold-workable steel. No. 850,271. Kohle und Eisenforschung G.m.b.H.

Improvement in treatment of glass in electric furnaces. No. 850,272. S.A. des Manufactures des Glaces et Produits Chimiques de Saint-Gobain, Chauny et Cirey.

Manufacture of hermetically sealed glass containers. No. 850,278. Corning Glass Works.

Manufacture of cellulose ethers. No. 850,113. Mme. A. Lilienfeld.

Conversion of di-ketones of the cyclopentanopoly=hydrophenanthrene series into hydroxyketones. No. 850,115. Schering A.G.

Preparation of ortho-dicarboxylic imides containing sulfamido groups. No. 850,122. I. G. Farbenindustrie A.G.

Stabilized alkaline metal alcoholate. No. 850,126. Mathieson Alkali Wks.

Production of petroleum hydrocarbon amines. No. 850,172. Vereinigts Glauzstoff-Fabriken A.G.

Production of HCN from thiocyanates. No. 850,209. Deutsche Gold- und Silber-Scheideanstalt vormals Roessler.

Preparation of carboxylic acids and chlorides. No. 850,217. I. G. Farbenindustrie A.G.

Preparation of hydrogenated olefines. No. 850,218. I. G. Farbenindustrie A.G.

Condensation products and process of manufacture. No. 850,305. Deutsche Hydrierwerke A.G.

Manufacture of sulfurous anhydride. No. 50,130/845,050*. A. N. Mann.

Manufacture of triarylmethane compounds. No. 50,130/824,094*. I. G. Farbenindustrie A.G.

Production of polymerized amides. No. 50,150/826,070*. E. I. du Pont de Nemours & Co., Inc.

Manufacture of vat dyes. No. 850,085. E. I. du Pont de Nemours & Co., Inc.

Mono-azo dyes and process of manufacture. No. 850,220. I. G. Farbenindustrie A.G.

Carboxylic acids of the anthraquinone series and acid wool dyes derived therefrom. No. 850,221. I. G. Farbenindustrie A.G.

Preparation of dyes and their use to modify the properties of photographic emulsions. No. 850,262. Kodak-Pathé S.A. Française.

Improvement in mine explosives. No. 850,185. Les Petits-Fils de François de Wendel & Co.

Mixture of odorous substances. No. 850,180. I. G. Farbenindustrie A.G.

Aluminum chloride treatment of oils and greases. No. 850,312. M. M. J. Bouffort.

Pressure hydrogenation of carbonaceous materials. No. 50,101/847,095*. Ste. Belge de l'Azote et des Produits Chimiques de Marley *and* Ste. Chimique de la Grande-Paroisse.

Binding of rubber on metals. No. 850,167. R. J. Reaney.

Manufacture of latex articles. No. 850,238. Regeltex (S.R.L.)

Improvement in the protection of rubber surfaces. No. 850,298. B. F. Goodrich Rubber Company.

Treatment of water. No. 850,112. Eau et Assainissement, Anciens Ets. Ch. Gibault.

Treatment of asbestos. No. 850,120. Westinghouse Electric & Mfg. Co.

Manufacture of round, open-surfaced, artificial sponges. No. 850,136. Société de la Viscose Française.

Fire-extinguishing foam. No. 850,159. I. G. Farbenindustrie A.G.

Production of polymerized products. No. 850,182. I. G. Farbenindustrie A.G.

Wax and rubber coating composition. No. 850,188. Dewey & Almy Chemical Co.

Polymerization process. No. 850,210. I. G. Farbenindustrie A.G.

Manufacture of hydrohalogenated rubber compositions. No. 850,212. Marbon Corporation.

Elastic sheets. No. 850,292. Commercial Ingredients Corporation.

FRENCH PATENTS GRANTED SEPTEMBER 11, 1939; PUBLISHED SEPTEMBER 28, 1939

Extraction of proteins from peanuts. No. 850,388. Imperial Chemical Industries, Ltd.

Treatment of textile fibres. No. 850,327. Fabrique de Produits Chimiques ci-devant Sandoz.

Manufacture of artificial filaments etc. from casein or other proteins using acid coagulating bath. No. 850,455. N.V. Onderzoekinginstituut Research.

Manufacture of artificial fibres having the dyeing qualities of animal fibres. No. 850,498. Societa Generale Italiana della Viscosa.

Refining with strongly basic slag in high frequency furnaces. No. 850,320. Kaiser-Wilhelm Institut fur Eisenforschung.

Treatment of steels. No. 850,543. S.A. des Hautes-Fourneaux, Forges et Aciéries de Pompey.

Tight jointing between glass and glazed ceramic bodies. No. 850,362. Fides Gesellschaft fur die Verwaltung und Verwertung von Gewerblichen Schutzrechten m.b.H.

Preparation of isophorone. No. 850,334. Carbide and Carbon Chemicals Corp.

Preparation of para-amino-benzaldehydes. No. 850,456. I. G. Farbenindustrie A.G.

Recovery of organic oxy-compounds from aqueous solutions containing one or more salts. No. 850,461. N.V. de Bataafsche Petroleum Mij.

Manufacture of ascorbic acid. No. 850,539. Les Etablissements Byla.

Manufacture of solid dyes. No. 850,431. I. G. Farbenindustrie A.G.

Manufacture of varnish. No. 850,453. I. G. Farbenindustrie A.G.

Manufacture of iron oxide base pigment. No. 850,465. I. G. Farbenindustrie A.G.

Drying oil. No. 850,492. I. G. Farbenindustrie A.G.

Manufacture of dyes from basic colors. No. 850,494. I. G. Farbenindustrie A.G.

Manufacture of artificial products of high mechanical strength. No. 850,342. Rohm & Haas G.m.b.H.

Manufacture of phenol formaldehyde condensation products. No. 850,377. Novalit Mugyanta es Vegyipari Reszvenytarsaag.

Production of solid dyes. No. 850,502. I. G. Farbenindustrie A.G.

Production of ortho-oxyazo dyes. No. 850,530. Ets. Kuhlmann.

Transformation of high-boiling into low-boiling hydrocarbons. No. 850,497.

Preparation of blue-black lacquer colors. No. 850,496. I. G. Farbenindustrie A.G.

Preparation of resinous condensation products. No. 850,378. I. G. Farbenindustrie A.G.

FRENCH PATENTS GRANTED SEPTEMBER 18, 1939; PUBLISHED OCTOBER 5, 1939

Saccharification of cereals. No. 850,563. Les Usines de Melle.

Manufacture of artificial filaments etc. from solutions of cellulose. No. 850,819. Steckborn Soie Artificielle S.A.

Bleaching of textile fibres. No. 850,866. I. G. Farbenindustrie A.G.

Washing and bleaching of artificial fibres made from cellulose solutions. No. 850,594. I. G. Farbenindustrie A.G.

Dyeing *en masse* of casein fibres. No. 850,793. H. Dosne.

Manufacture of hard alloys from carbides of the metals of the sixth periodic group and from other metallic refractory compositions. No. 850,580. Le Carbone-Lorraine.

Treatment of nickel matte. No. 850,651. I. G. Farbenindustrie A.G.

Alloys. No. 850,622. I. G. Farbenindustrie A.G.

Treatment of iron ores. No. 850,789. I. de Vecchis.

Reduction of oxides hard to reduce. No. 850,808. I. G. Farbenindustrie A.G.

Preparation of sulfamidic and sulfonic compounds. No. 850,553. A. Mouneyrat.

Production of aluminum fluoride. No. 850,608. Rutgerswerke A.G.

Manufacture of sodium bicarbonate by the ammonia process. No. 850,632. A. M. Oswald.

Preparation of melamine. No. 850,633. Henkel & Cie. G.m.b.H.

Extraction of polyalcohols from aqueous solutions. No. 850,684. Speas Development Company.

Preparation of alcohol ethers. No. 850,702. Bohme Fettchemie G.m.b.H.

Preparation of polyoxy derivatives. No. 850,708. I. G. Farbenindustrie A.G.

Manufacture of fatty acid esters of monochlorhydrine. No. 850,709. I. G. Farbenindustrie A.G.

Decomposition of ferrous sulfate into ferric oxide and sulfur oxides. No. 850,715. P. De Lattre.

Preparation of aromatic amines. No. 850,744. I. G. Farbenindustrie A.G.

Manufacture of fatty acid esters of glycerine. No. 850,751. I. G. Farbenindustrie A.G.

Preparation of carboxylic compounds such as aldehydes and ketones. No. 850,752. I. G. Farbenindustrie A.G.

Preparation of aliphatic ketones sulfonation products. No. 850,753. I. G. Farbenindustrie A.G.

Manufacture of derivatives of oxyalkylamines. No. 850,761. A. J. Lafage & D. Libermann.

Preparation of chlorinated ethers. No. 850,810. I. G. Farbenindustrie A.G.

Anti-corrosion pigment. No. 850,700. L. Renault.

Mono-azo dyes. No. 850,742. I. G. Farbenindustrie A.G.

Manufacture of carbon black. No. 850,771. Societa Italiana Pirelli.

Mono-azo yellow dyes. No. 850,799. Fabrique de Produits Chimiques ci-devant Sandoz.

Tri-azo green dyes. No. 850,868. Fabrique de Produits Chimiques ci-devant Sandoz.

Coagulation of aqueous suspensions containing pigments. No. 850,881. E. I. du Pont de Nemours & Co., Inc.

Preparation of titanium pigments. No. 850,882. E. I. du Pont de Nemours & Co.

Production of liquid hydrocarbons from coal, tars, mineral oils, etc. No. 850,809. I. G. Farbenindustrie A.G.

Manufacture of synthetic plastic resins. No. 850,699. L. Renault.

Stabilization and concentration of rubber latex. No. 850,763. I. Traub, F. W. Wren & J. H. Platford.

Emulsions similar to latex. No. 850,829. I. G. Farbenindustrie A.G.

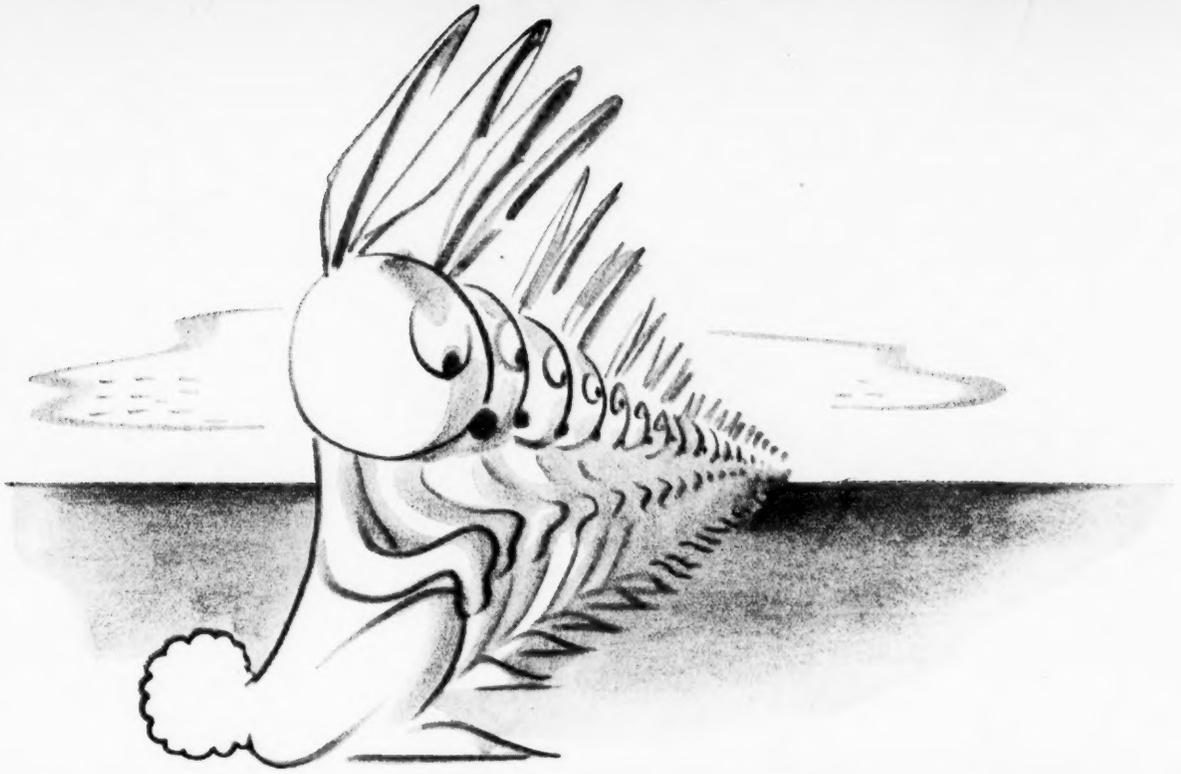
Catalyst. No. 850,607. Standard Oil Development Company

Polyvinyl alcohols condensation products. No. 850,845. Dr. Alexander Wacker Gesellschaft fur Elektrochemische Industrie G.m.b.H.

Polyvinyl alcohol condensation products. No. 850,891. I. G. Farbenindustrie A.G.

Condensation products and process of preparation. No. 850,892. I. G. Farbenindustrie A.G.

* Additions to previously issued patents. Second number is number of the original.



Perhaps You Didn't Know About Them All

Nearly everyone in the chemical industry seems to know that the Warner Division of Westvaco Chlorine Products Corporation pioneered the production of phosphates in the United States—that Westvaco itself is a principal producer of caustic soda, chlorine and related products—that a newer phase of our business is the production of Magnesium Oxide from sea-water bittern by our subsidiary, the California Chemical Company.

But many other Westvaco products are perhaps not so well known. So for our good friends who occasionally tell us: "I didn't know Westvaco made *that*", we list our principal products and invite inquiries for quotations, samples and technical data.

Tetra Sodium Pyrophosphate
Acid Sodium Pyrophosphate
Alumina Hydrate, Light
Adsorptive Granular Magnesia
Adsorptive Powdered Magnesia
Chloride-free Magnesia
Plastic and "Quick" Magnesia
Chemical Grade Magnesia
Phosphoric Acid

Barium Carbonate
Barium Hydrate
Barium Oxide
Barium Peroxide
Caustic Soda
Caustic Potash
Epsom Salt
Hydrogen Peroxide
Bromine

Sodium Phosphates
Chlorine, Liquid
Sulphur Chloride
Carbon Tetrachloride
Trichlorethylene
Carbon Bisulfide
Sodium Sulfide
Sea-water Periclase
Blanc Fixe

WARNER

CHEMICAL COMPANY ☆ DIVISION OF

WESTVACO CHLORINE PRODUCTS CORPORATION

CHRYSLER BUILDING, NEW YORK, N. Y.